Introduction to Scientomentrics
A brief lecture course for students of a medical university

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Preface

Dear readers,

You are holding in your hands a publication that explains in an understandable language the necessity and importance of scientometrics.

The term was coined by V. V. Nalimov; he wrote, "Science is a self-organizing system and its development is controlled by its information flows". The external conditions - budget allocated for the science, organizational forms in a particular country, ideological pressure, secrecy - all these are just the environment in which science develops. The environment may be favorable or unfavorable, but it cannot force science to develop in any direction that is organically alien to it. The bibliographic references reflect the intellectual atmosphere in which the publication was written.

Scientometrics analyzes the quantitative aspects of scientific publications; this scientific discipline investigates the evolution of science through multiple measurements and statistical processing of scientific information (number of scientific articles published in a given period of time, citations, etc.).

Today, the students' research activity becomes one of the factors of their professional development. The students should be able to use the tools of scientific search and data systematization to understand the principles of qualitative and quantitative evaluation of publications, citations and scientometric indices.

Science and the methods of its measurement is a dynamic process, which is characterized by regular changes. This applies to all stages of work including the availability and regular updating of the interface, as well as the main and additional functions of bibliographic and abstract databases of peer-reviewed scientific literature.

The purpose of this guide is to help students to understand the basic tools and resources enabling effective and responsible navigation through the information space of modern science.

Basics of Scientometrics

After **Denis V. Butnaru**, Vice-Rector for International Affairs, Sechenov University

In this lecture, some basic scientometric indicators will be explained and discussed using the Scopus database.

Let us start with the Hirsch index (h-index) and then move on to the notion of an Impact factor. First, we should open the main page of *Scopus*.
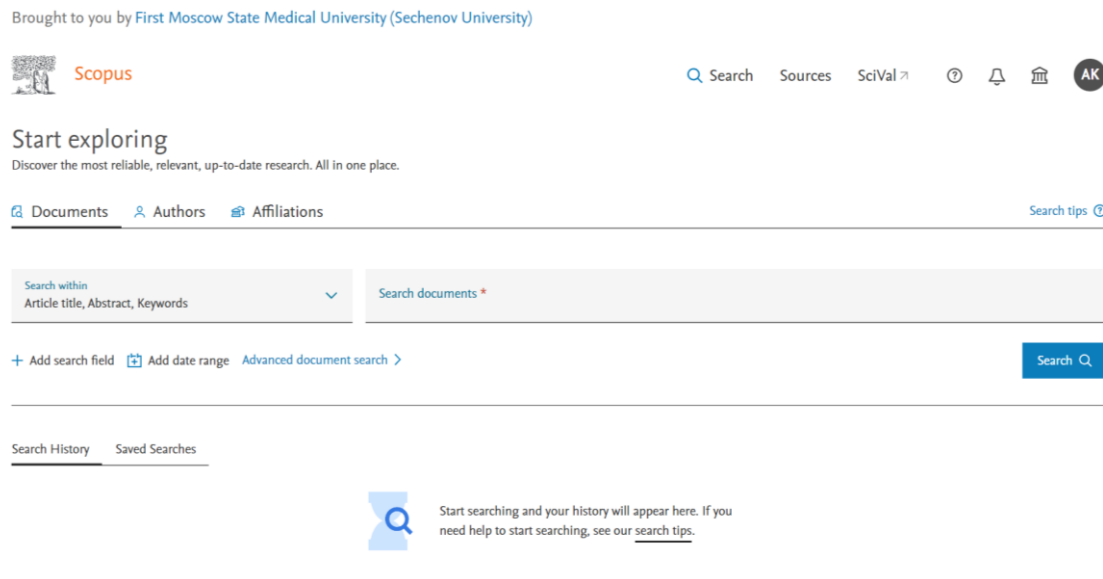

Figure 1. The main page of Scopus. https://www.scopus.com/home.uri

To give you an example, I could click on the "Authors" tab and enter my last name "Butnaru", my first name "Denis", the affiliation "Sechenov", and press "Search".

Figure 2. Search for an author profile.

There is only one search result because I am the only Butnaru who works at Sechenov University. If we click on my last name, we will view my main page in Scopus as well as my **Hirsch index**, which equals 5.

Figure 3. Butnaru's main page.

What does the Hirsch index 5 mean? In order to understand the meaning of this indicator, we have to look at the list of my articles (better viewed "in search results format") and the citation number.

Figure 4. Butnaru's list of articles.

As you can see, articles are sorted by date from the newest to the oldest. To count the Hirsch index, we must rank articles by the citation number first. Use the filter "sort by" here, then click on the drop-down list and choose to range the citation number in a descending order.

Figure 4. Butnaru's list of articles in a descending order.

Finally, the Hirsch index can be calculated. If the Hirsch Index is 3, it means that the author has at least 3 publications, each of which has been cited at least 3 times. How is the Hirsch index calculated based on this data? On the left we see the serial number of the article - 1,2,3,4,5. The fifth article has been cited 6 times, the fourth article has been cited 6 times, the third article has been cited 6 times, the second one – 15 times and the first one – 15 times. So, I have at least 5 articles, and each of them was cited at least 5 times.. If I wanted my Hirsch index to become 7, then the seventh article should be cited 7 times, the sixth - 7 times, the fifth - 7 times, the fourth - 7 times, the third - 7 times, the second and first are already well cited. Thus, the h-index is a measure of the **number of publications** published (productivity), as well as **how often they are cited.** The Hirsch index 10 means that this author /team of authors/ has published at least 10 papers, each being cited at least 10 times. Some scientists' Hirsch index is 100 or higher, and people that have such high indicator work at our university. This means that these authors have at least 100 publications that have been cited at least 100 times each. I hope that everything is clear regarding the Hirsch index.

Now let us move on to the *Impact factor*. You already know that the Hirsch index shows how demandable and noteworthy to the global scientific community the works of this particular scientist are. It is a questionable and well-criticized indicator, but it is widespread and actively used. The Hirsch index is a scientometric indicator, but in order to evaluate a scientist we need something more than just indicators. Expert opinions are also needed, so two aspects, scientometric indicators and expert opinions, are often used to make a comprehensive evaluation.

In order to evaluate a scientist, an institute or an organization we can use the Hirsch index and expert opinions, but in order to evaluate journals another indicator is needed. Journals also compete among themselves in order to determine which one is better and which one is worse. *The impact factor is used to evaluate the prestige of a journal.* There is a lot of controversy about the impact factor too, but it is widely used, that is why we need to understand what it

means. *The impact factor of the journal reflects the yearly mean number of citations of the articles published in a given journal in the two previous years.*

For example, the impact factor of the journal is 3. This means that if you publish your article in this journal, then 2 years later it can be cited 3 times. One of the most prestigious medical journals, the New England Journal of Medicine, has an impact factor of 50+. What does this mean? This means that if you publish your paper in this journal, there is a high probability that your publication will be cited more than 50 times in 2 years.

However, the impact factor was developed by a company that belongs to the Web of Science database. Scopus is a different platform, so the true impact factor can only be calculated for the journals indexed in the Web of Science.

Of course, journals can calculate this indicator themselves, but the true impact factor can only be calculated in the Web of Science. Since we use Scopus more often, we tend to apply another indicator, a **CiteScore**, which is very similar to the impact factor.

What is CiteScore? Once again, let us open the Scopus website and view the search results. My most cited article was published in the journal "Stem Cell Research and Therapy". If you click on the name of the journal, a page with all the information about it will appear:
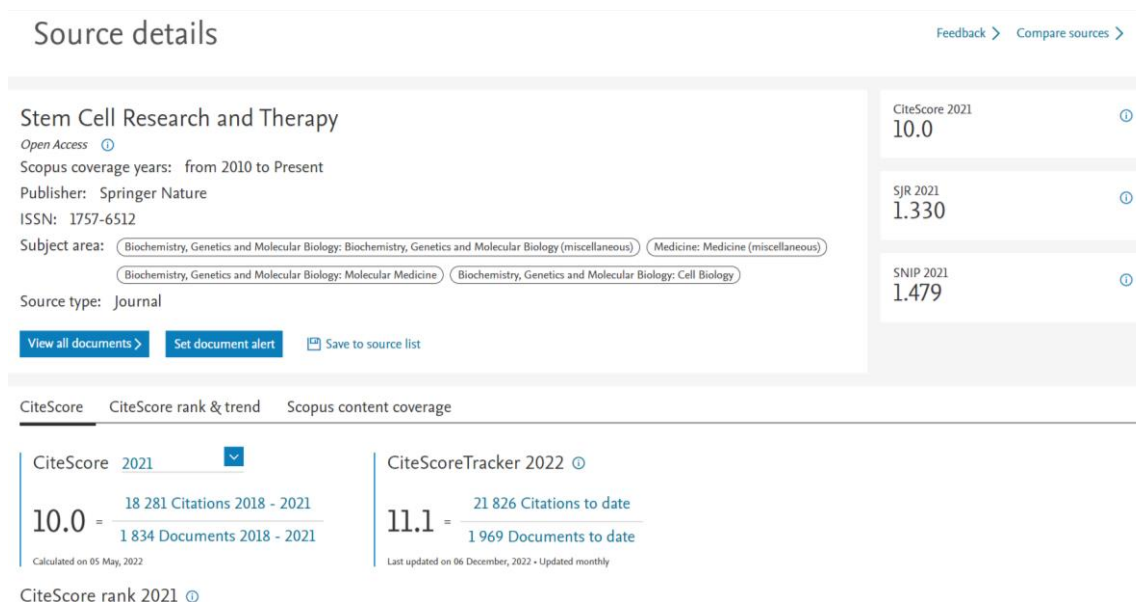
Figure 5. Stem Cell Research and Therapy.

> Stem Cell Research and Therapy. Scopus coverage years: from 2010 to Present. Publisher: Springer Nature. ISSN and all other necessary information are also here. The journal's CiteScore is 4.83.

What is CiteScore? In my example, *it is the number of citations in 2018 divided by those publications that were published in the previous three years (2015-2017).* There are 3,627 citations and 757 documents. This means that if you publish your article in "Stem Cell Research and Therapy", there is a chance that your article will gain 4.83, almost 5 citations in 3 years.

Thus, *CiteScore and an impact factor indicate how competitive the journal is among other scientific journals and how often articles of this journal are cited.* We have already discussed the Hirsch index. It allows us to assess the scientific competitiveness of a particular scientist, a team of scientists, an institute and the entire country. Of course, the H-index has its limitations. The Impact factor and CiteScore allow us to assess the competitiveness of scientific journals.

Another scientometric notion is the *quartiles of journals*. It is another tool to characterize a particular scientific journal in terms of its attractiveness to the author.

What does the quartile mean? Let us go back to the journal of "Stem Cell Research and Therapy" on the website. In the lower right corner (Fig. 5) you can see the CiteScore ranking and the *Medicine* category. There are other categories too, for example, Biochemistry, Genetics and Molecular Biology. There is also one more category similar to the previous one, but for the simplicity of my lecture let us asume that this journal has only two categories – Medicine and Biochemistry. What does it mean? That means that this journal publishes only Medicine or Biochemistry articles.

All 205 Scopus journals in the Medicine category are ranked. Scopus has 205 medical journals. The "Stem Cell Research and Therapy" journal ranks 18th among all 205 journals, and this applies to percentile 91. This journal is in the top 10 among all medical journals.

There are 165 Biochemistry journals in Scopus, and this journal ranks 23rd. It refers to the 86th percentile and is still the first quartile, but not in the top 10. The top 10 is above the 90th percentile, the 86th percentile is below the 90th percentile. Let us discuss quartiles in detail by looking at the Scopus medical journals. As I have already mentioned, there are only 205 of them.

Let us take these 205 journals. If we divide them into 4 groups, of 25% each, the lowest block will have the lowest CiteScore, and it is going to be the first 25% of journals, or the fourth quartile. 26% - 50% – quartile 3, 51% - 75% - quartile 2, 76% - 99% – quartile 1.

We tend to highlight the best journals of the first quartile, the top 10 journals of the tenth percentile. That was a brief introduction to the quartiles of journals.

In the Web of Science, the quartiles will differ based on the impact factor. There may be different quartiles in the e-library too. As you see, the quartiles of journals, as well as the Hirsch index, depend on the system and database in which the journals are indexed.

We now go back to the Hirsch index.

The Hirsch index is not a universal concept. The Hirsch index of the same scientist may be different in the Web of Science and Scopus because of the larger amount of journals in Scopus, for example.

In the e-library that may be regarded the Russian equivalent of Scopus, the number of journals is higher than in Scopus. Therefore, as a rule, the Russian scientists have a higher Hirsch index in the e-library than in Scopus, and their h-index is lower in Scopus than in the e-library, accordingly.

It is important to keep in mind that when we talk about the Hirsch index of a scientist, we have to indicate a database.   If we say the Hirsch index is 5 in Scopus, it equals 5 only in Scopus and may differ in the Web of Science, for instance. In the e-library the h-index is likely to be higher for Russian scientists because more Russian journals are indexed in the e-library than in Scopus.

Now let us learn how to view the main page of Sechenov University in Scopus. Click on the organization (Fig. 6) and enter the name of the organization using Latin letters, "Sechenov University".
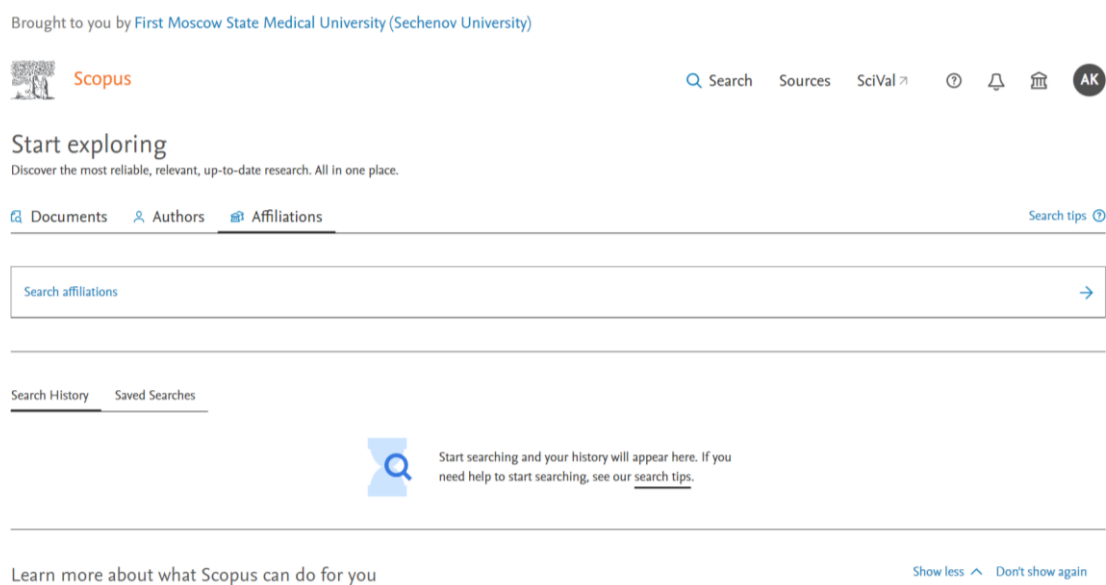
Figure 6. Search for an organization.

You can already see both the I. M. Sechenov First Moscow State Medical University and the Sechenov Institute of Evolutionary Physiology and Biochemistry in St. Petersburg.

Obviously, we click on our university's name, and then our university's main page with some general information. [ЗДЕСЬ НУЖНЫ СКРИНШОТЫ АНГЛ. ВЕРСИИ СКОПУСА!]
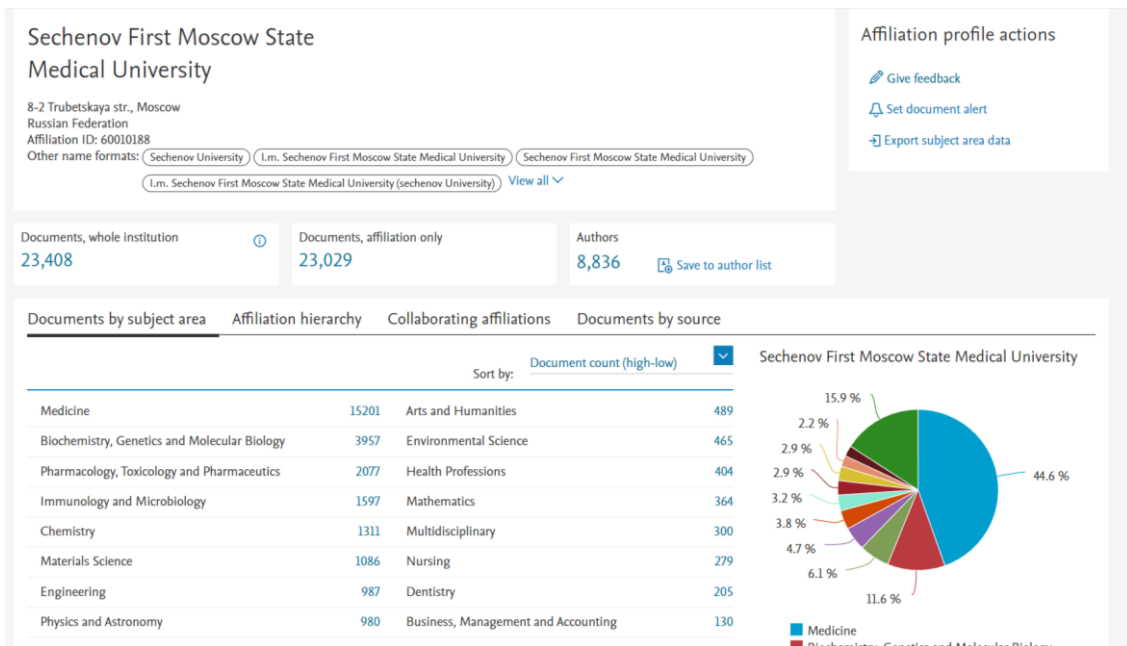
Figure 7. Sechenov University's main page in Scopus.

In total, we have more than 10,000 publications indexed in Scopus over the years (see the diagram, Fig. 7). About half of the publications are the medical ones, a significant part of all publications is devoted to Biochemistry, Genetics, Molecular Biology, and few other topics. In the lower left corner you can see the number distribution of these areas: 15201 publications in Medicine, 3957 publications in Biochemistry, 2077 publications in Pharmacology and so on. We have six thousand authors affiliated with our university, but we are currently interested in more in-depth information, so we click on the documents - "all institutions 23408". All publications of our university can be found here.
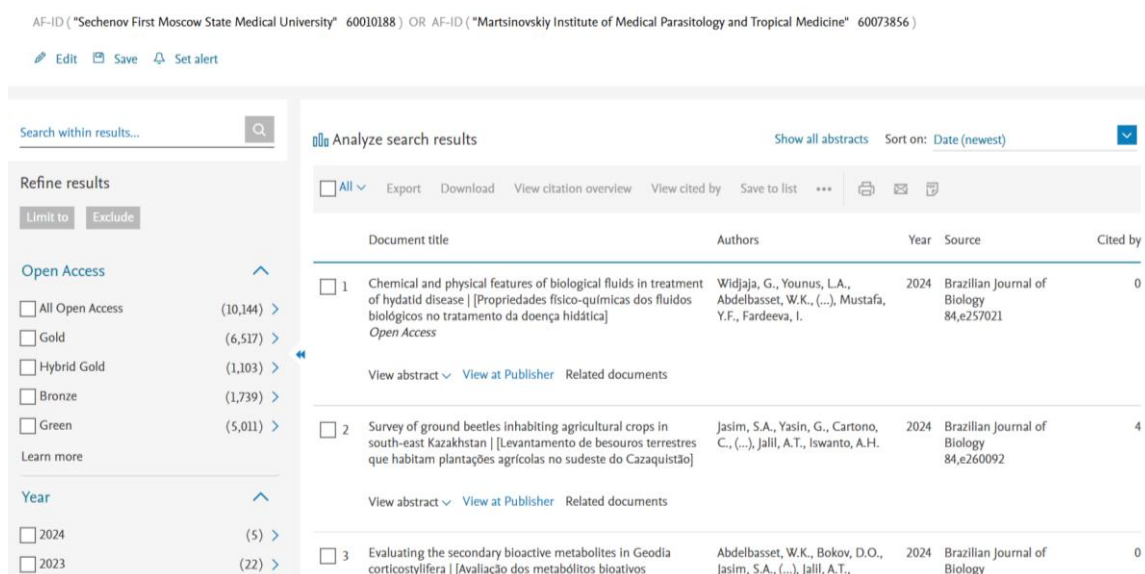
Figure 8. Sechenov University's list of documents.

They are already ranked from the most quoted to the least quoted ones. You can also see that we have publications in the New England Journal of Medicine. That is our second publication in this journal, we have already talked about it [the journal]. You may obtain a lot of necessary information here, for instance, the Hirsch index of our university.

You may evaluate the h-index of our university the same way we did with the h-index of a particularresearcher. We simply need to see where the serial number of the publication and the level of citation overlap.

For example, this article's ordinal number is 66, but the number of citations is few times lower than that. So, the number of citations of the 66th article is lower per unit while the number of citations of the 65th article is higher per unit. It means that the Hirsch index of Sechenov University since the very first publication of our university in Scopus is 65.

That is how the h-index of the University can be evaluated.

We can also rank these publications by the number of citations, as the newest and the oldest… You may find the drop-down menu here and experiment on your own. On the left hand side you can see a tool that helps you rank publications. You can choose an access type between "open access" and "other" (Fig 9). You are able to set limits, for example, how many publications we have had in the last five years. You can view authors with the largest number of publications of our university of all time. You are able to see a general amount of publications, articles and reviews we have, and so on. Another interesting fact is you can analyse search results. Just put a check mark on all publications, all of 10444 publications, and click "analyse search results" (Fig. 10). The information is presented in various graph formats.

Figure 9. Sechenov university's list of documents 2.

7,565 document results

AF-ID ("Sechenov First Moscow State Medical University" 60010188) OR AF-ID ("Martsinovskiy Institute of Medical Parasitology and Tropical Medicine" 60073856) AND (LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015))

✏ Edit   💾 Save   🔔 Set alert

Search within results...		Analyze search results	Show all abstracts Sort on: Date (newest)	
Refine results		☐ All ⌄ Export Download View citation overview View cited by Save to list ••• 🖨 ✉		
Limit to Exclude		Document title	Authors	Year Source Cited by
Open Access ⌃		☐ 1 Biological diagnosis based on microfluidics and nanotechnology (📘 Book Chapter)	Kashaninejad, N., Yaghoobi, M., Pourhassan-Moghaddam, M., (...), Jin, D., Warkiani, M.E.	2019 Nanotechnology for Microfluidics pp. 211-238 2
☐ All Open Access (3,123) >				
☐ Gold (1,874) >		View abstract ⌄ View at Publisher Related documents		
☐ Hybrid Gold (332) >		☐ 2 Sleep duration and cardiovascular risk: Results of the large-scale epidemiology study ESSE-RF Open Access	Bochkarev, M., Korostovtseva, L., Medvedeva, E., (...), Boytsov, S., Shlyakhto, E.	2019 Arterial Hypertension (Poland) 23(4), pp. 248-255 1
☐ Bronze (652) >				
☐ Green (1,364) >		View abstract ⌄ View at Publisher Related documents		
Learn more				
Year ⌃		☐ 3 Pathogenetic approach to the treatment of functional disorders of the gastrointestinal tract and their intersection: Results of...	Ivashkin, V.T., Poluektova, E.A., Glazunov, A.B., Butilkin...	2019 BMC Gastroenterology 20(1) 2 8
☐ 2019 (2,975) >				

7,565 document results

AF-ID ("Sechenov First Moscow State Medical University" 60010188) OR AF-ID ("Martsinovskiy Institute of Medical Parasitology and Tropical Medicine" 60073856) AND (LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015))

✏ Edit   💾 Save   🔔 Set alert

Search within results...		Analyze search results [View charts and graphs related to this results list]	Show all abstracts Sort on: Date (newest)	
Refine results		☐ All ⌄ Export Download View citation overview View cited by Save to list ••• 🖨 ✉		
Limit to Exclude		Document title	Authors	Year Source Cited by
Open Access ⌃		☐ 1 Biological diagnosis based on microfluidics and nanotechnology (📘 Book Chapter)	Kashaninejad, N., Yaghoobi, M., Pourhassan-Moghaddam, M., (...), Jin, D., Warkiani, M.E.	2019 Nanotechnology for Microfluidics pp. 211-238 2
☐ All Open Access (3,123) >				
☐ Gold (1,874) >		View abstract ⌄ View at Publisher Related documents		
☐ Hybrid Gold (332) >		☐ 2 Sleep duration and cardiovascular risk: Results of the large-scale epidemiology study ESSE-RF Open Access	Bochkarev, M., Korostovtseva, L., Medvedeva, E., (...), Boytsov, S., Shlyakhto, E.	2019 Arterial Hypertension (Poland) 23(4), pp. 248-255 1
☐ Bronze (652) >				
☐ Green (1,364) >		View abstract ⌄ View at Publisher Related documents		
Learn more				
Year ⌃				

Figure 10. Sechenov university's list of documents 3.

In 1926, our first publication was published (Fig. 11). By clicking on it, we can find out what kind of publication it was. "1926, journal of Current Research in Anesthesia and Analgesia, Rossyisky, D.M." (Fig. 12)

It was our university's first publication that appeared in one of the Scopus journals. A significant increase in our publication activity occurred in 2015 and 2016, mainly in 2016, when we entered Project 5-100. Since then, the number of publications has dramatically increased.
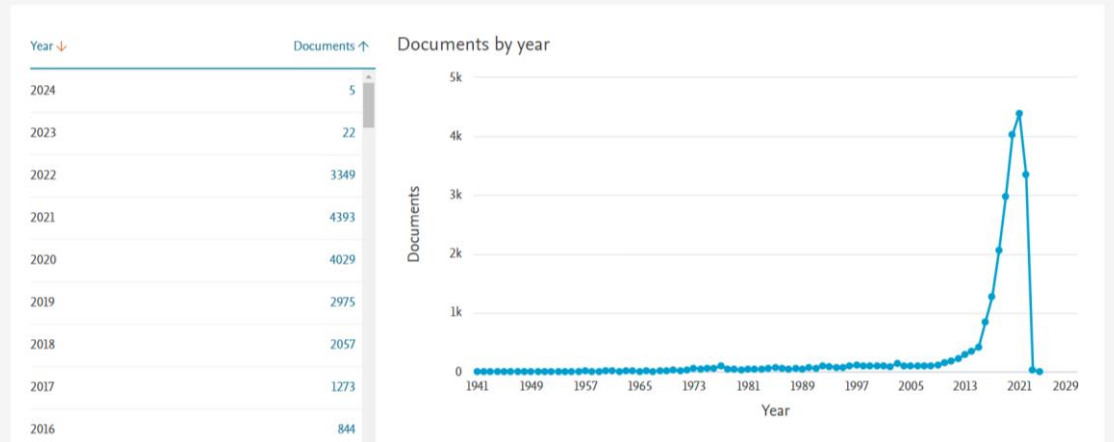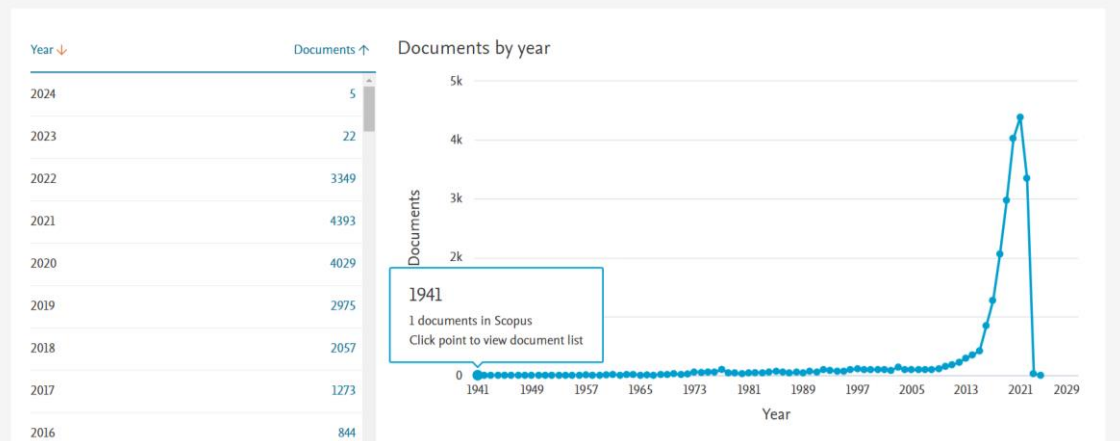
Figure 11. Sechenov university's first article on a graph.
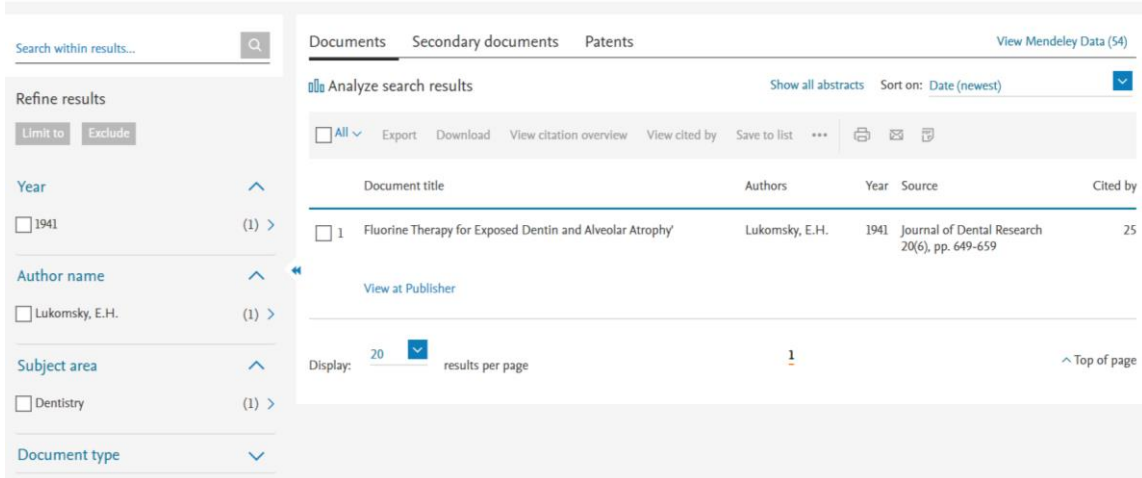
Figure 12. Sechenov university's first article.

That is what type of data you may find here. You may see in which journals we publish our papers most actively (Fig. 13).

The the top 5 journals in which our works are being actively published are as follows:.Terapevticheskiy arkhiv (Therapeutic archive), Pharmaceutical Chemistry Journal, Bulletin of Experimental Biology and Medicine, Zhurnal nevrologii i psikhiatrii imeni S.S. Korsakova (S.S. Korsakov Journal of Neurology and Psychiatry), Meditsinskaya Parazitologiya i Parazitarnye Bolezni (Medical Parasitology and Parasitic Diseases)…

ЗДЕСЬ НУЖНЫ СКРИНШОТЫ АНГЛ. ВЕРСИИ СКОПУСА!]
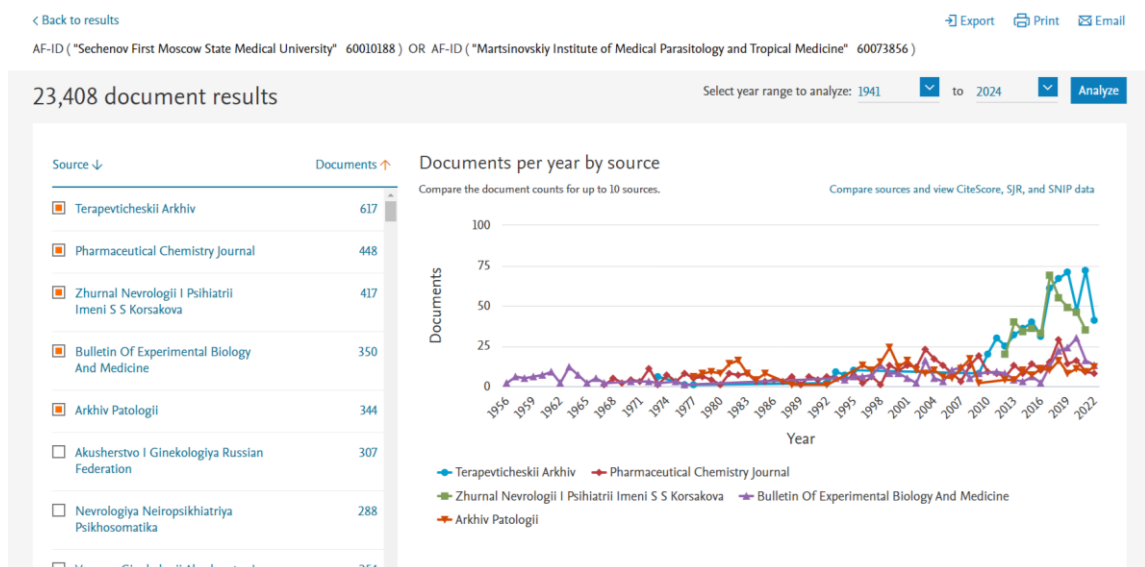
Figure 13. Journals in which Sechenov University's journals are being published actively.

What else can you find? Documents ranged by authors, organizations we actively cooperate with; documents ranged by country, type of documents, etc (Fig. 14).

ЗДЕСЬ НУЖНЫ СКРИНШОТЫ АНГЛ. ВЕРСИИ СКОПУСА!]
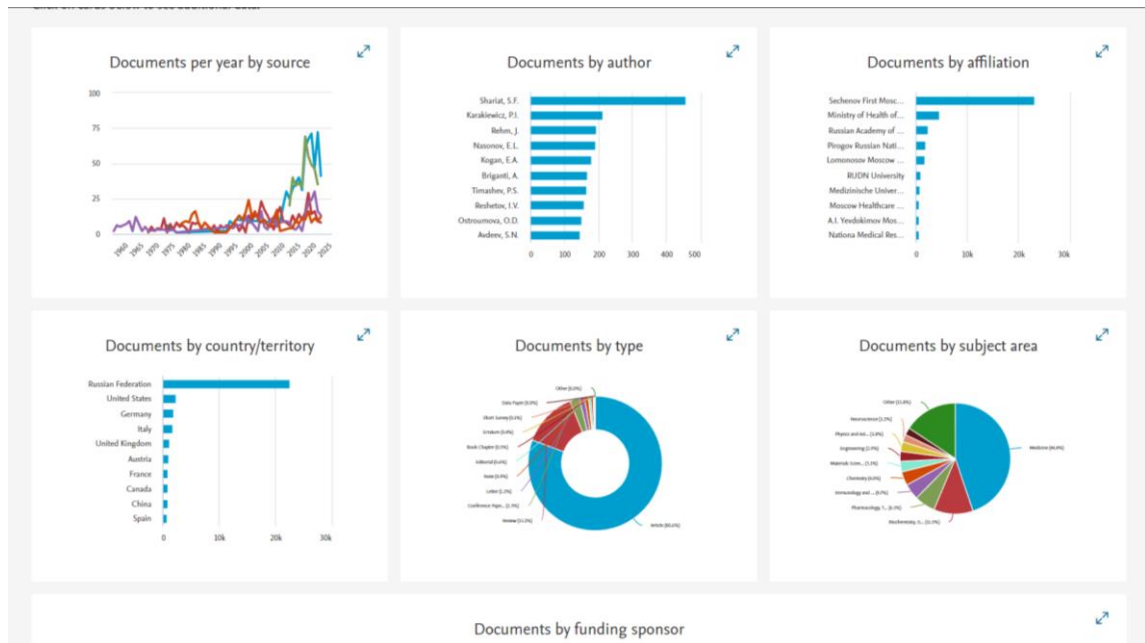
Figure 14. Different graphs.

That isall the information you can get about Sechenov University in the Scopus database. Of course, you can come up with various search algorithms and search more deeply into certain areas of your interest on your own.

I would like to say a few words about **Scimago Journal**.
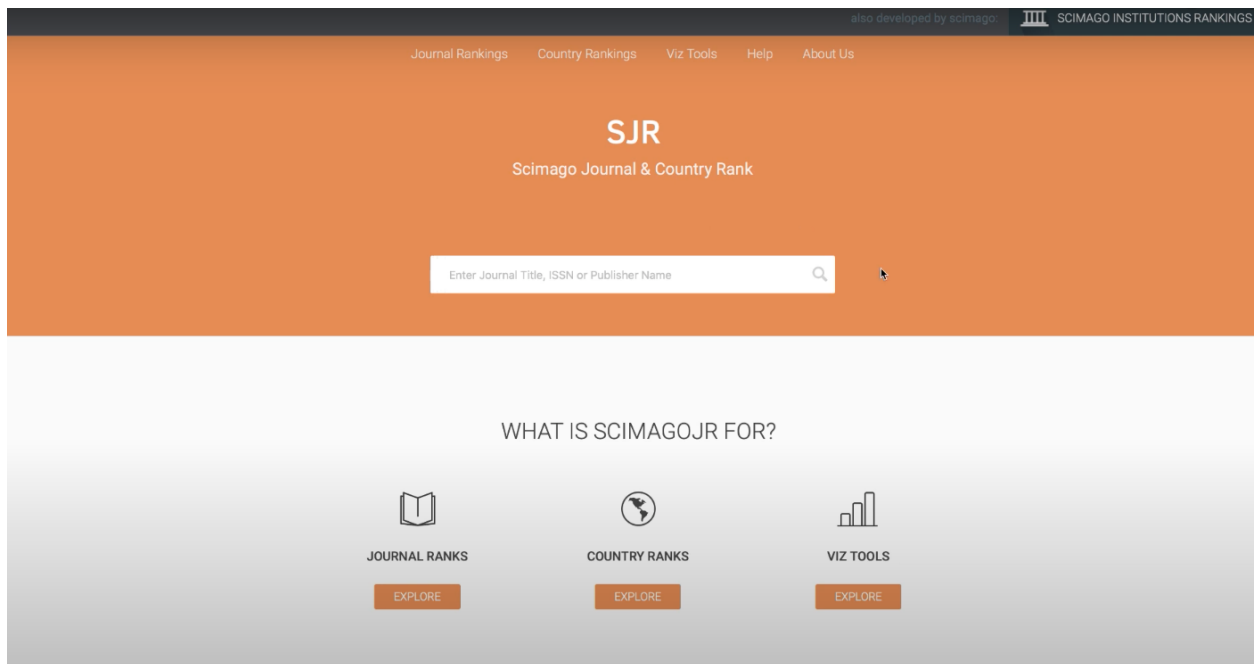
Figure 15. Scimago Journal, a main page. https://www.scimagojr.com

This resource ranks articles based on a particular indicator **SJR**. I am not going to talk about it in detail but you should know that this indicator exists in Scopus. Again, if we click on a particular journal, for instance, Medical Parasitology, you will see its SJR (Fig. 16). ЗДЕСЬ НУЖНЫ СКРИНШОТЫ АНГЛ. ВЕРСИИ СКОПУСА!]
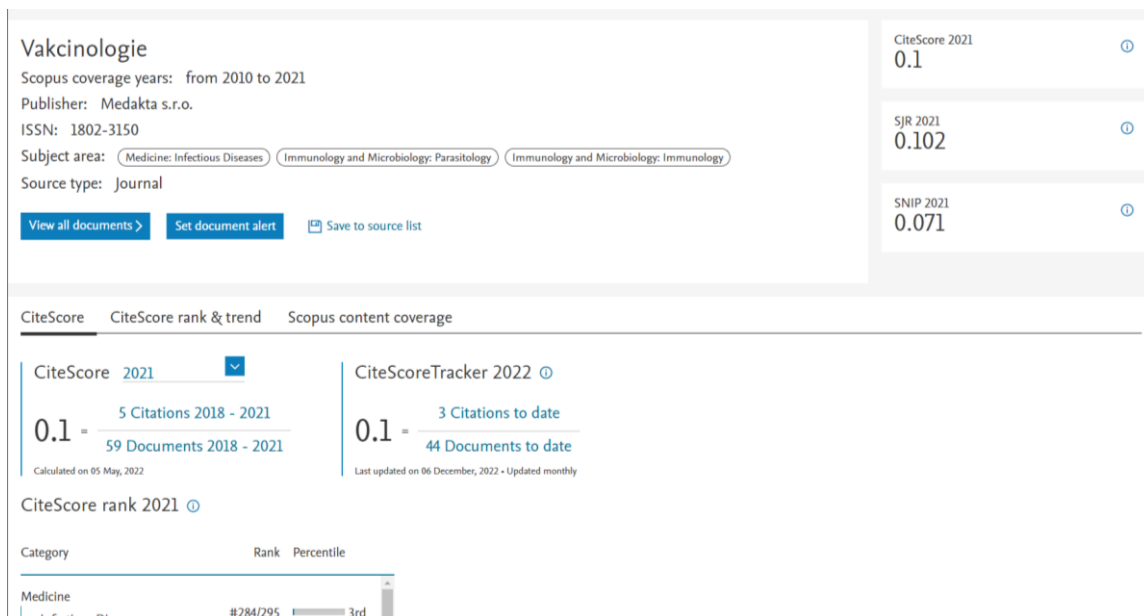
Figure 16. Medical Parasitology, a main page in Scopus.

SJR shows how the citation level of this journal corresponds to the world level. So, SJR value > 1 is the world-class SJR value. In this case, SRJ value < 1, so the publications of this journal are cited about seven times less than the world average.

To sum up, journals can be ranked according to both CiteScore and SJR. As it turned out, there are some differences between these two indicators. For instance, a quartile of a journal according to SJR and a quartile of a journal according to CiteScore may differ, but we are more interested in CiteScore at our university. . Nevertheless, Scimago Journal is a convenient resource that allows you to rank journals by quartile right away. As I said before, there are small differences between sorting journals in quartiles according to SJR and CiteScore. Anyway, it is an exception, not a rule.

Let us take a look at this Journal Rankings resource. Click on "journal rankings" (Fig. 15).
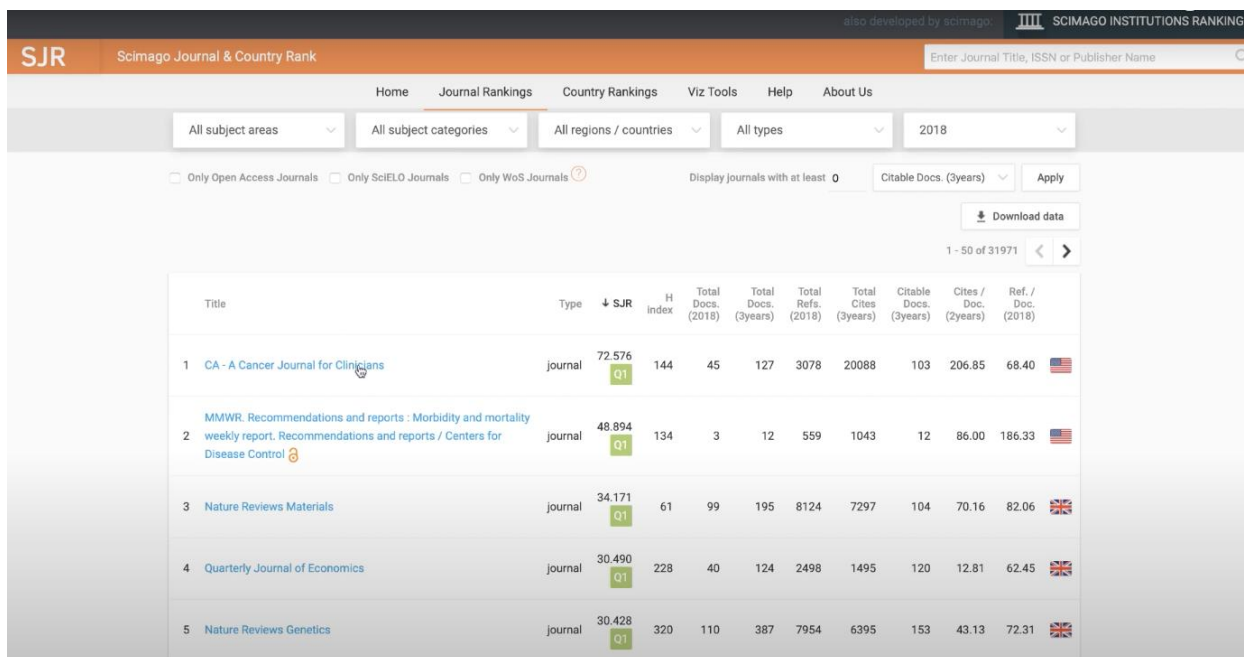
Figure 17. Journal rankings, Scimago Journal.

The best medical journals among all scientific journals are ranked here (Fig. 17). This is CA – A Cancer Journal for Clinicians, its SJR is 72 which is 72 times higher than the world average. Papers in this journal are being cited the most. Over the last three years, there have been 200,000 citations in total.

"Average citation per document in a 2- year period" is an index close to the impact factor.

206 is a large number of publications, a huge number of citations among all subject areas. We can choose what interests us most, for example, medicine, and view the quartile distribution of medical journals. Obviously, A Cancer Journal for Clinicians remains the first as it was. As we see, the first 50 journals out of 7430 are shown in this page (Fig. 18). We can classify these journals in more detail, for example, we can choose "Urology" instead of "all subject categories" and view a list of Urology journals ranked (Fig. 19). 105 journals are in this database, so there will be slightly more than 25 journals in each quartile.

As we already know, the most cited and respectable medical journal on Urology is European Urology.

18

Thus, *Scimago Journal is a convenient resource to research information on journals you need.*

Figure 18. Medical journals, SJR.

Figure 19. Medical journals, Urology, SJR.

If you want to know which medical journals are published in Russia, enter "Russian Federation" in a search box. Unfortunately, we do not have any Q1 journals, but some of them are found in the Q2 category, for instance, Biochemistry (Fig. 19). As you can see, all the journals published in the Russian Federation, are mainly in Q3 and Q4 categories (Fig. 19, 20). If you want, you may view and analyse them on your own.

Figure 20. Russian medical journals, SJR.

Figure 20. Russian medical journals, SJR 2.

PUBMED

We are going to talk about *PubMed*. It is another resource that allows you to search for scientific publications. My lecture will be divided into two parts , namely, theory and practice.

Letus start with what Medline is. *Medline* is the largest bibliographic database of articles created by the US National Library of Medicine (NLM), which contains more than 30 million scientific biomedical abstracts and full-text articles (but there are fewer full-text articles than abstracts). A distinctive feature is that Medline records are indexed using *MeSH* (medical subject headings). It is a convenient tool that allows you to create a comprehensive query.

Medline consists of three main sections: *1) MedLine*, which includes about 12 million abstracts of articles published since 1966; *2) OldMedLine* is the Medline before 1966 (1946-1965); it contains 1.7 million publications; *3) PreMedline* includes basic citation information and abstracts for the most recent articles, before they are fully indexed and put into MedLine. About half a million new abstracts are added to Medline annually. MedLine covers about 75% of the world's medical publications.

What is PubMed? *Pubmed is an English-language text database of medical and biological publications created by the National Center for Biotechnological Information (NCBI) based on the section "Biotechnology" of the US National Library of Medicine (NLM).* Thus, PubMed is a product of Medline. This is the end of the theoretical part of my lecture, we are now going to learn how to use PubMed database ourselves.

If you enter "PubMed" in any search engine such as Google or Yandex, you will see the following search result: "National Center for Biotechnology Information."

If you click on it, you will open the PubMed main page. This is what it looks like (Fig. 1).
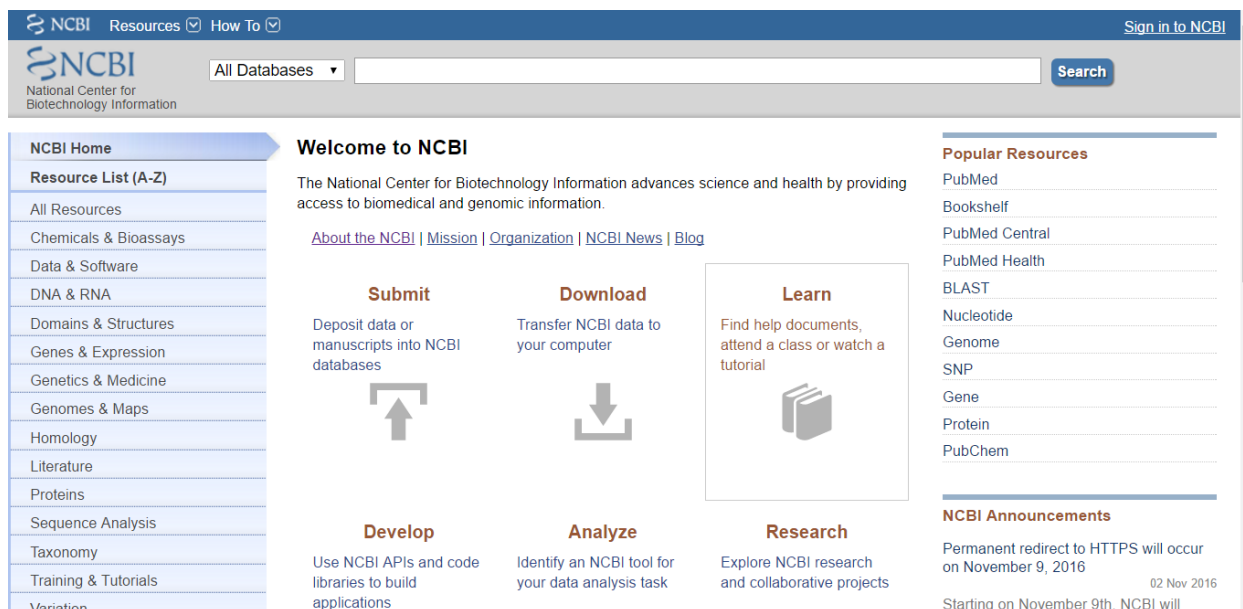
Figure 1. PubMed, a main page. https://pubmed.ncbi.nlm.nih.gov/

We can type something into this search box (in English, obviously), for example, "prostate cancer".
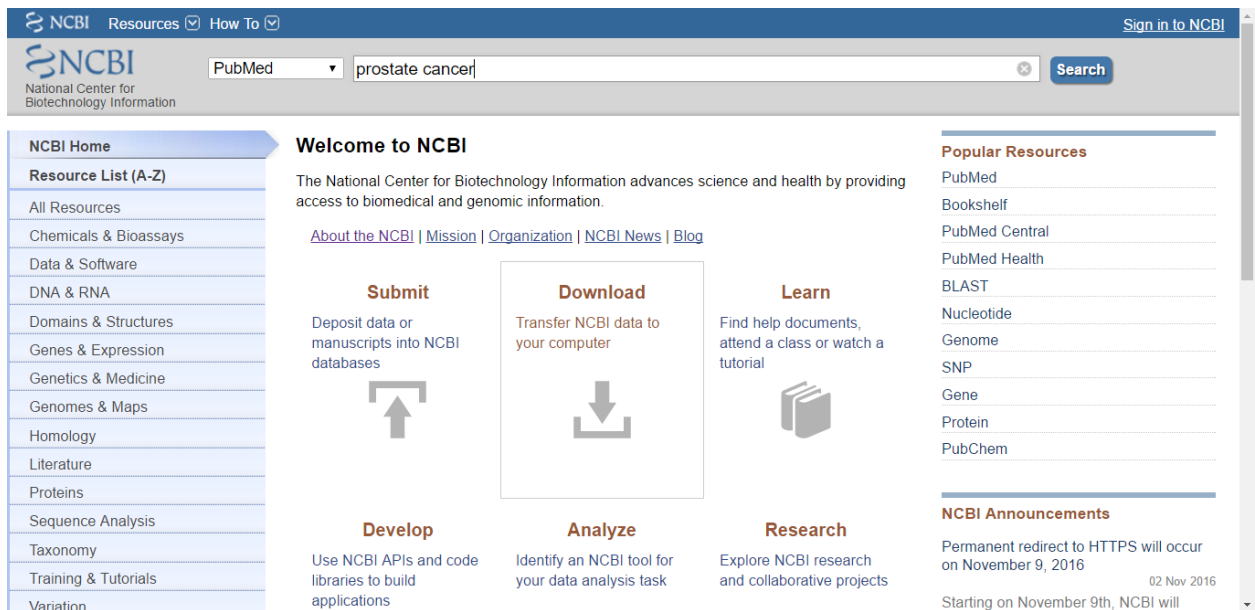
Figure 2. PubMed, a search box.

We have already discussed the difference between Scopus and PubMed. I want to remind you that *in Scopus we can view the number of citations of a publication*, but there is no such feature in PubMed, so we do not know how well a publication is cited and whether it is in demand by the scientific community.

However, PubMed has some advantages in comparison to Scopus. For example, *in PubMed there are more search filters* and a number of other features. I will show you that later.

In addition, other thing that is *both an advantage and a disadvantage of PubMed is that almost all abstracts or even just the titles of publications can be indexed there if they are written in English*. So *despite an increase of the scope of coverage, the quality reduces*.

To be indexed in Scopus or Web of Science, a journal must meet certain requirements. The quality of journals in Scopus and Web of Science is higher than in PubMed.

On the one hand, you may find some useless publications in PubMed. On the other hand, the scope of coverage is higher. To conclude, it is both an advantage and a disadvantage of PubMed. For example, when you type "prostate cancer", into the search box, you see the following search

results. They are listed here, all 168 607 publications (Fig. 3).
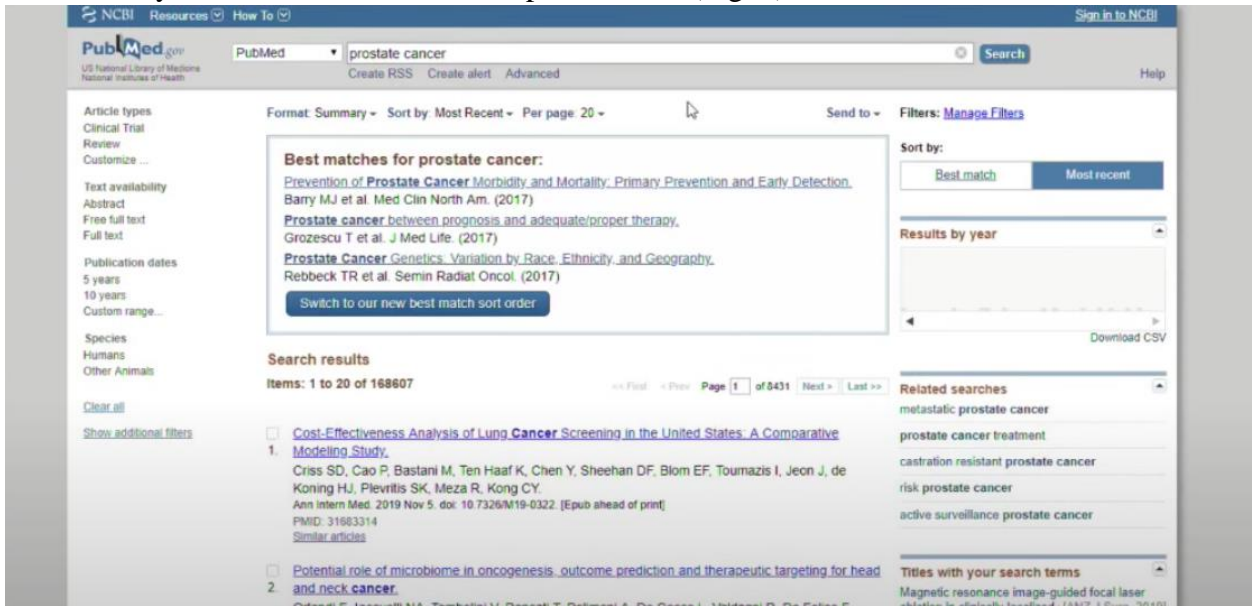
Figure 3. PubMed search results.

Now look at the heading on the left hand side of the page next to the search box, that is where we can choose a preferable database (Fig. 4). We have just searched "prostate cancer" in PubMed, but we can look for it in other databases too.
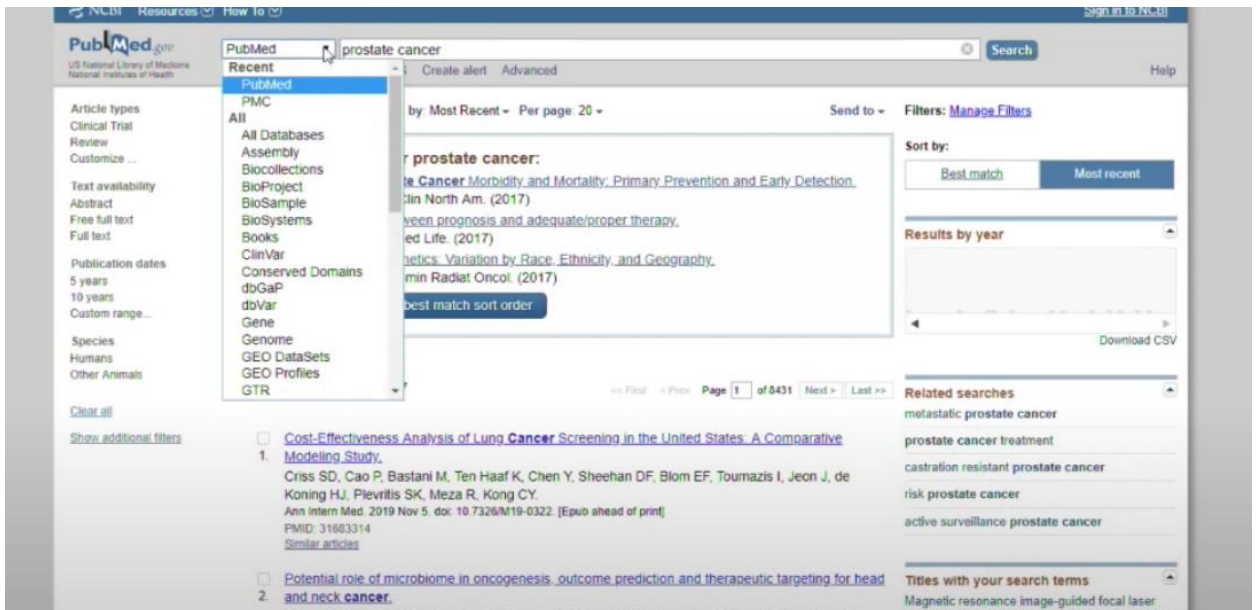
Figure 4. How to choose a preferable database in PubMed.

I am not going to go into detail because there is no need in that now. However, if we use "all databases" for our search, we will see the following result: "Bookshelf 8594." (Fig. 5)
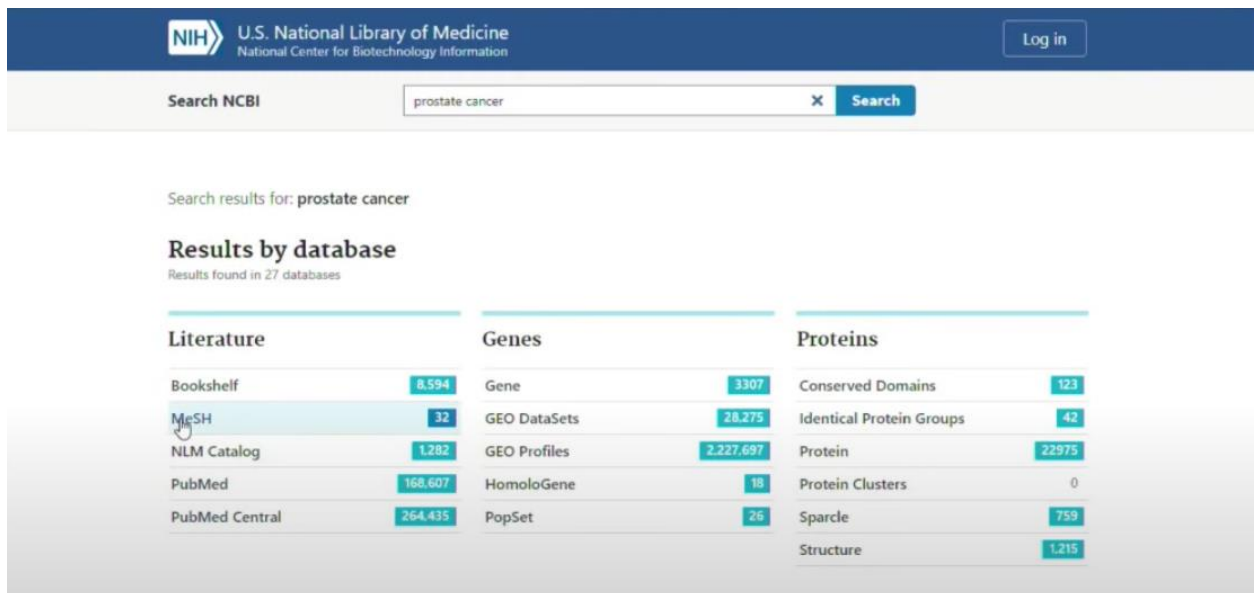
Figure 5. PubMed, search results among all databases.

That means that all of these 8594 books are about prostate cancer, and if you click on it, you will see these covers (Fig. 6).
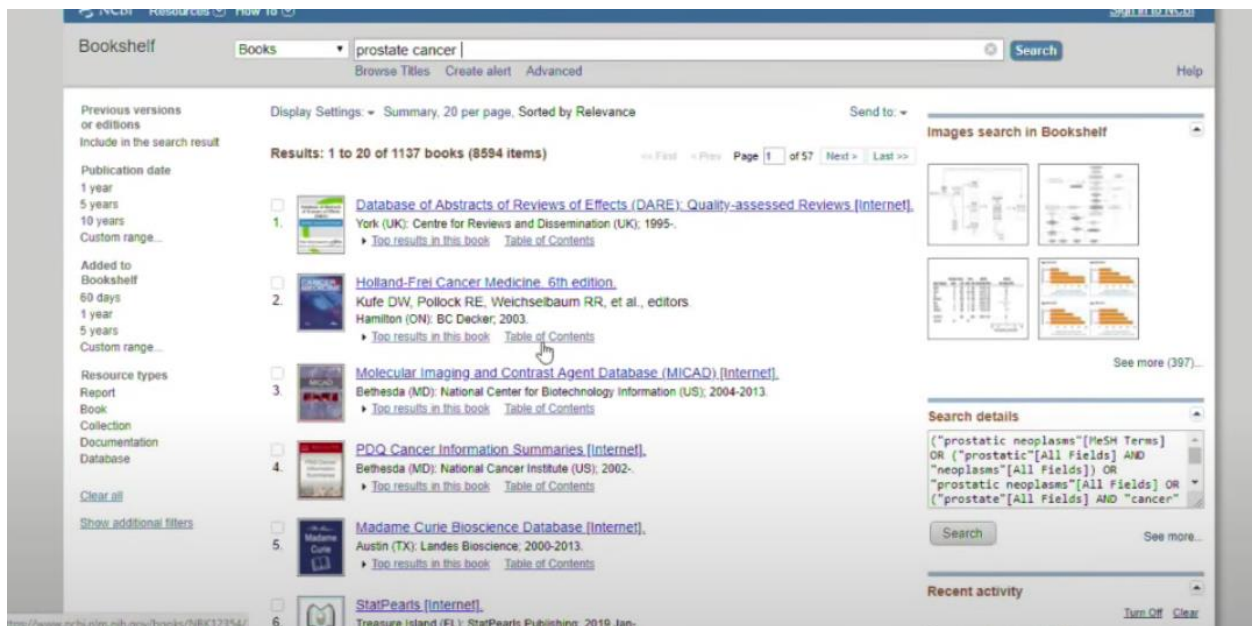
Figure 6. PubMed, covers.

Some of them can be downloaded for free, but the majority of them are payable. There is MeSH among databases as well, but we are going to talk about it a bit later. However, if we click on MeSH, we will see a list of articles that were manually processed by experts who create certain tags for the search. "Prostate cancer" appears in 32 MeSH headings (Fig. 7).
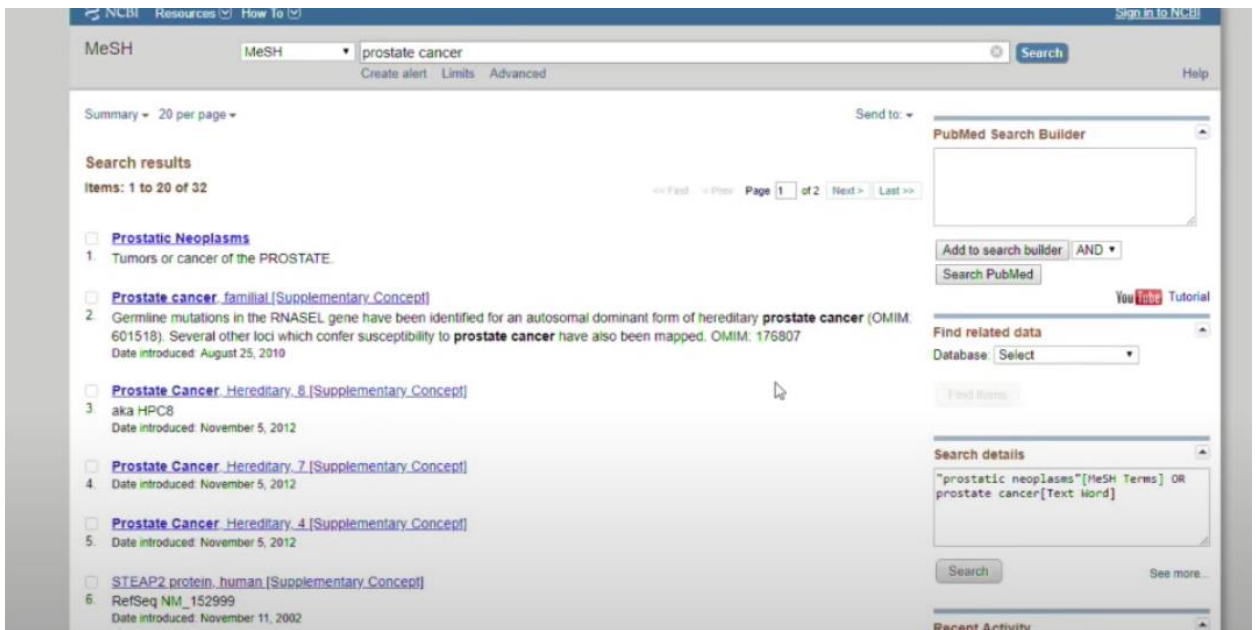
Figure 7. PubMed, search results, MeSH.

In everyday practice we do not search among all databases, searching in PubMed only is enough. So, what else do we see here? On the right hand side of the page there is a tool made for sorting these publications, for example, by "most recent" (Fig.8).
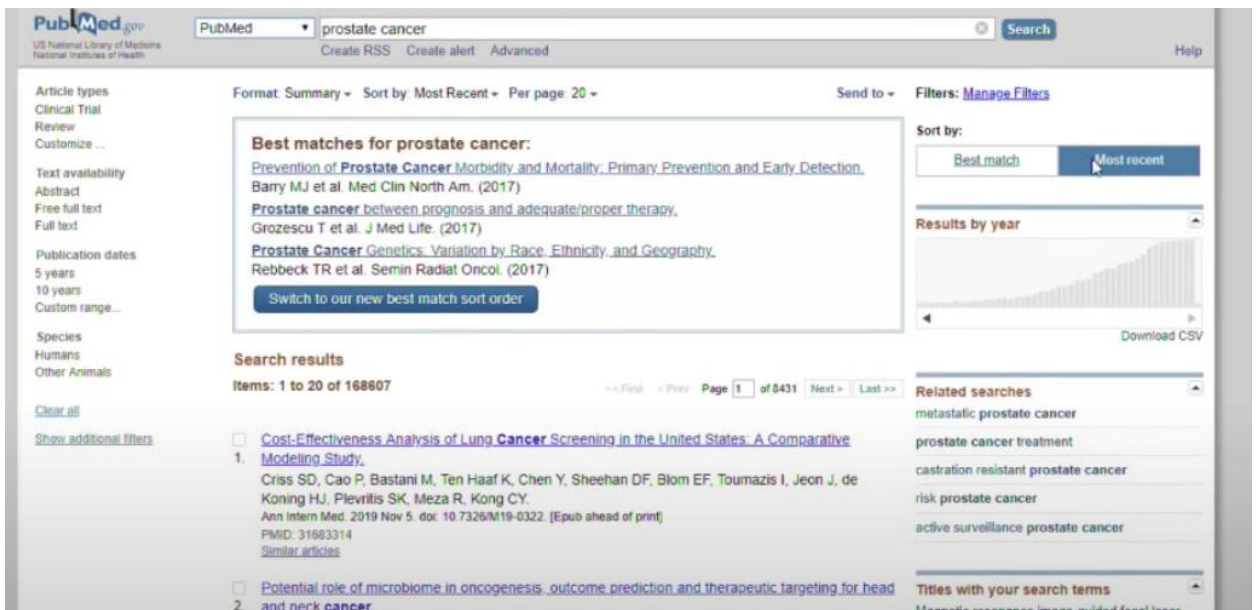
Figure 8. How to sort publications by "most recent".

That is the articles are sorted from the earliest to the latest ones. We can also sort them by "best match" (Fig.9).

Thus, PubMed has an algorithm that sorts out the articles that better correspond to the search query. As you can see, the phrase "prostate cancer" is already present in the search results. The article was published in July 2017, but it is still the best match.

On the left hand side of the screen you can see a graph that shows the gradually increasing number of publications. In the year 1993, 1600 papers were published, in 2017 - 9000 papers, in 2019 - 9000 papers.. If you click on this column, you will view publications best matched with the query from 2019 (Fig.9).
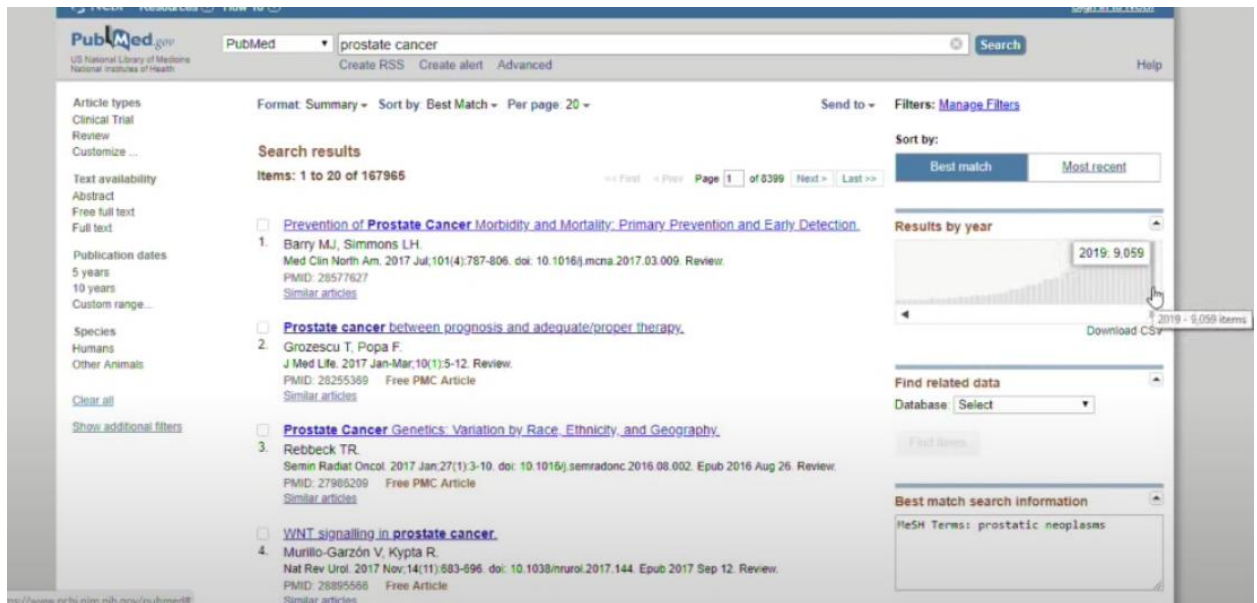
Figure 9. How to sort publications by "best match".

What else can we do? We can choose a format. That is how the format is presented: title, authors, journal where the paper was published, PMID (a unique number of a publication in Pubmed which is unique only to this particular article). PMID is used in order to subsequently refer to certain publications.

You can see that this article is freely available, so you can click on it and access the full-text version of this article (Fig. 10).

Figure 10. Free PMC Article.

Figure 11. How to download an article in PDF.

Let us go back to the search result. As I just said, if you see the words "Free PMC Article", then you can open the full-text version of this article for free. PMC stands for Pubmed Central. These free articles are mostly open access articles or articles that are in the public domain.

Let us go back to the format: article, title, authors, journal where the article was published, PMID, paid or free. In order to change the format, can click on "Summary", for instance (Fig. 12).
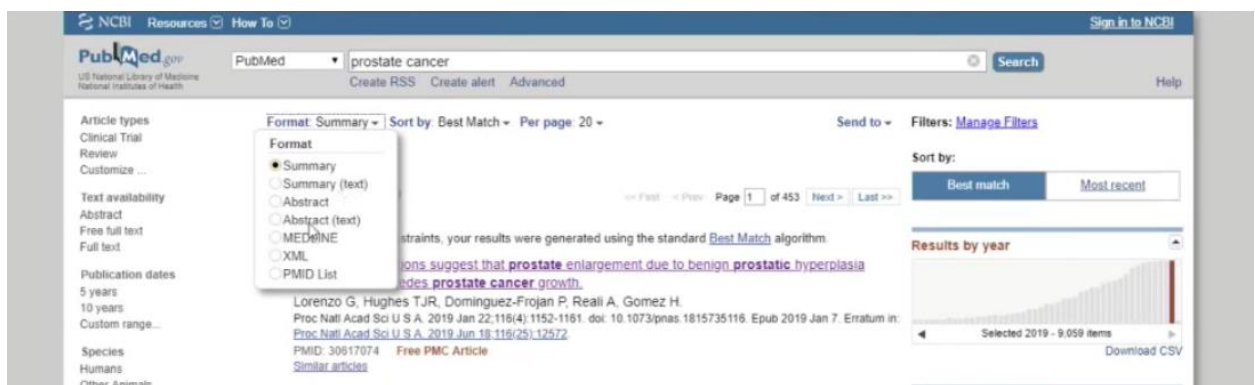
Figure 12. Change of a format.

You can select other formats such as Summary (text), Abstract, Abstract (text), Medline, XML or PMID list. For example, that what Summary (text) looks like.
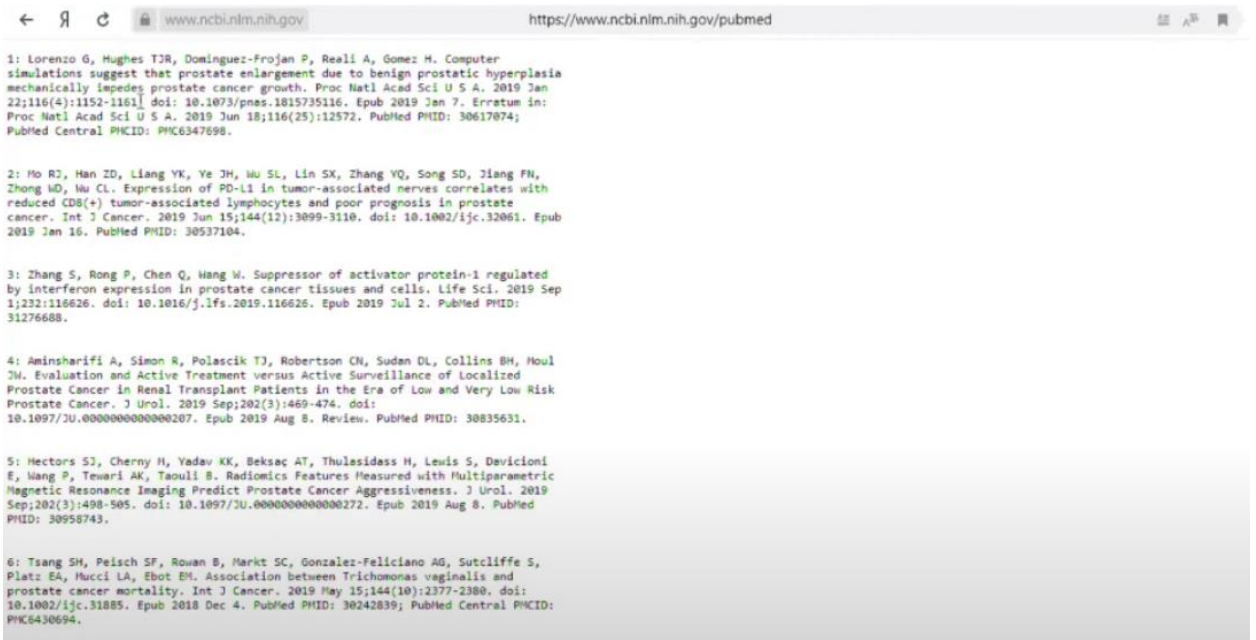
Figure 13. Summary (text).

You can present the search results as an abstract and gain slightly more information.
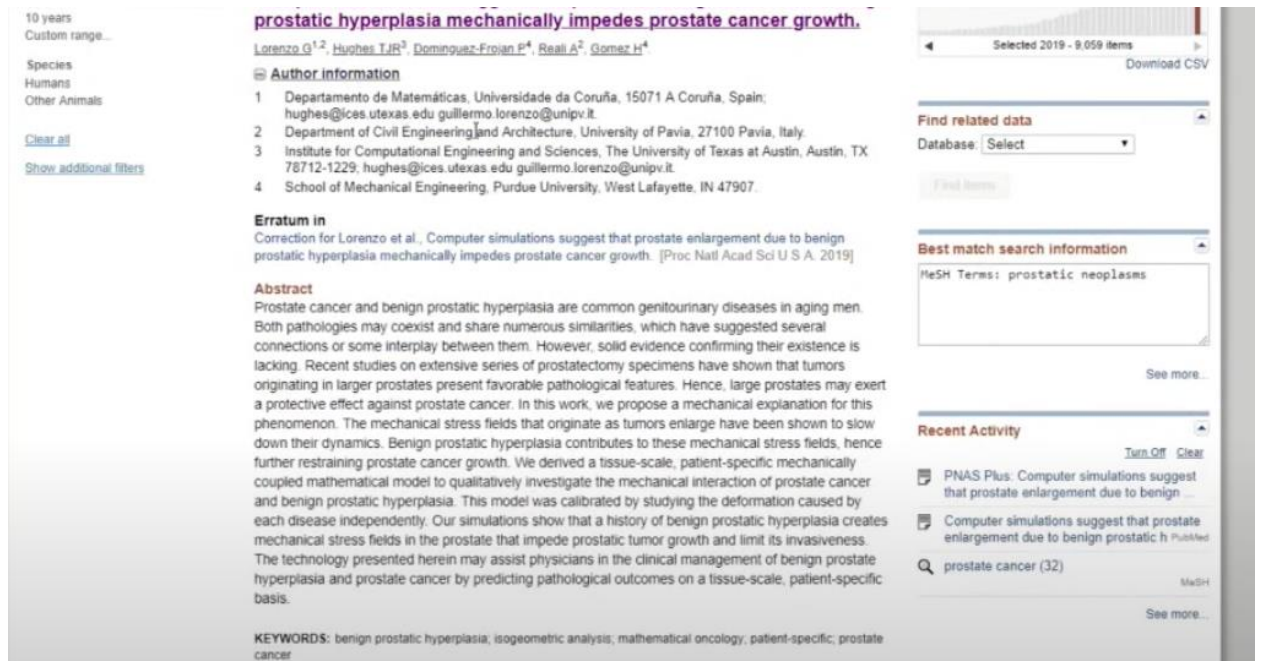
Figure 14. Abstract.

As I said earlier, it is possible to rank publications by "most recent" or "best match". Sorting by "publication date" is an available feature as well. The abstract format is not very convenient, so let us clear this filter and go back to Summary. You can also arrange articles by "first author", by "last author", by "Journal", by "Title" (Fig. 15). We rarely use all these tools, "most recent" and "best match" filters are usually more than enough.
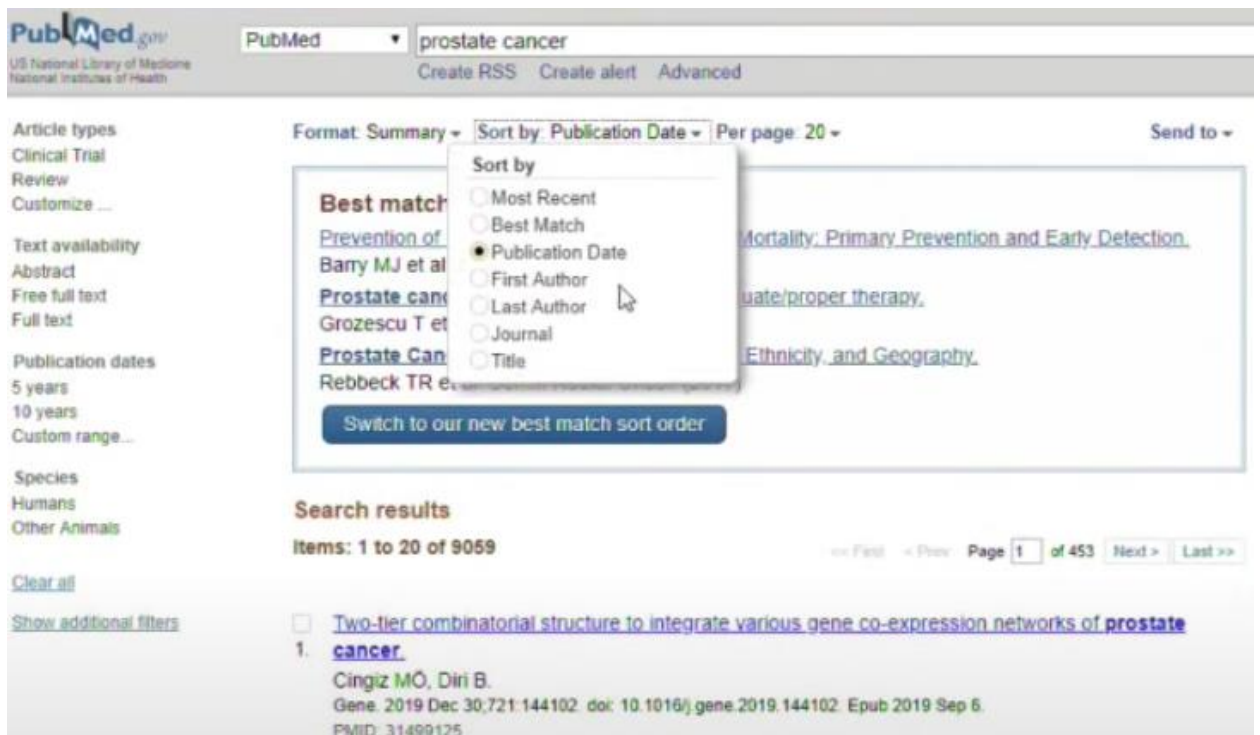
Figure 15. "Sort by" filter.

You are able to sort by the number of publications per page (Fig.16).
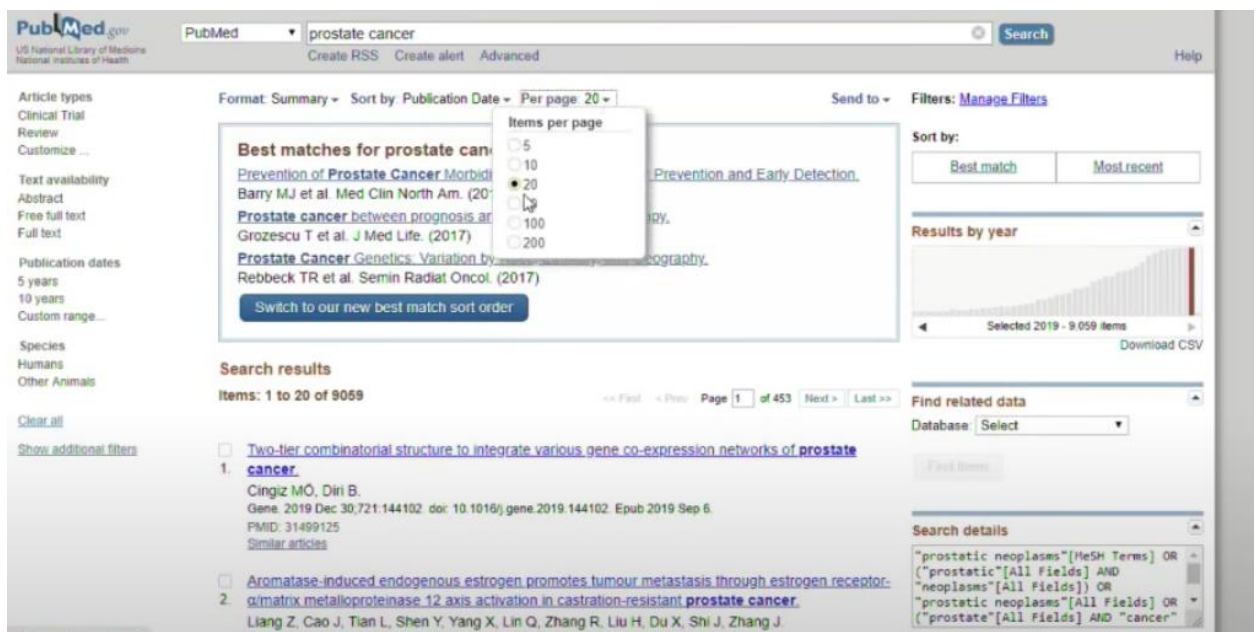
Figure 16. "Items per page" filter.

If you need to send an article to someone, first, save it on your computer in the format you prefer then click on "create file". After that, you should choose where to store this publication.
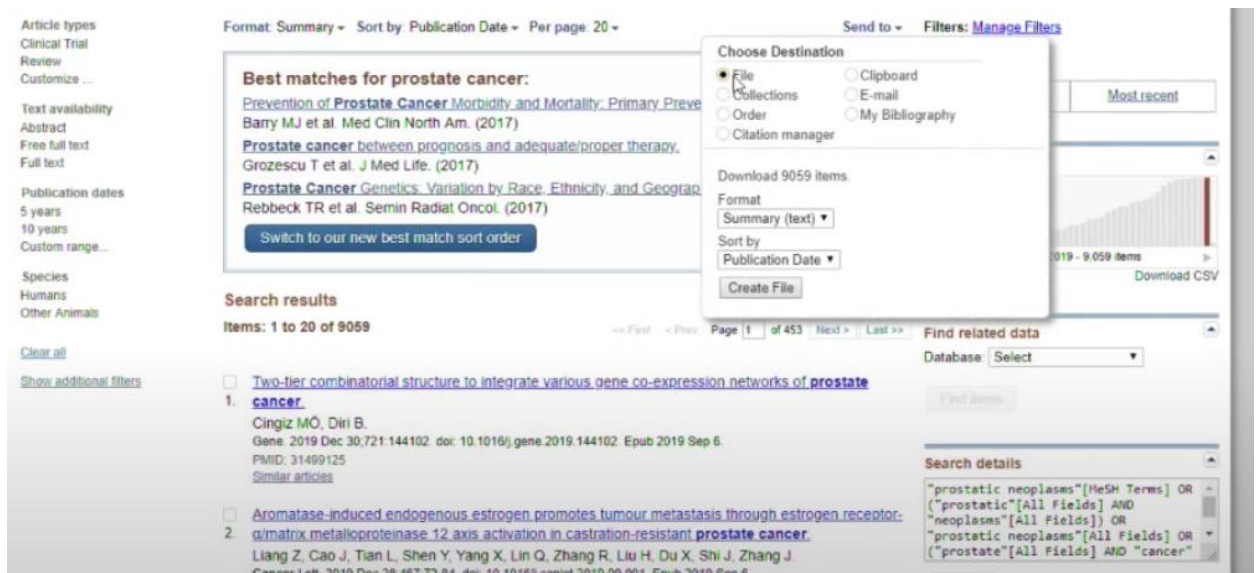
Figure 17. Choose Destination.

You may also want this article to be included in your bibliographic list. In order to do that, click on "citation manager" and save a link to this publication, and then use Mendeley.

Registration on PubMed is accessible as well. Click on "Sign In to NCBI" in the upper right hand corner, register on PubMed and save this publication to cloud drive storage on your personal page.

It is possible to send a publication to someone via e-mail, for example, to your friend or yourself (Fig. 18).

Figure 18. "Send to" feature.

We have discussed the general information so far, but now we are getting to something more interesting. In the left sidebar some filters are found, you may use them to search more efficiently. There are four default filters: article types, text availability, publication date, species (Fig.19).

There is also an option "show additional filters" for you to select the desired categories such as languages, sex, journal categories, age of those patients who participated in this research (Fig. 20).

Figure 19. Filters: article types, text availability, publication date, species.

Figure 20. Additional filters.

After you click "show", all these filters appear in your left menu. You can choose the language you need, for example, English, Russian or any other ones (Fig.21). The default language on PubMed is English.
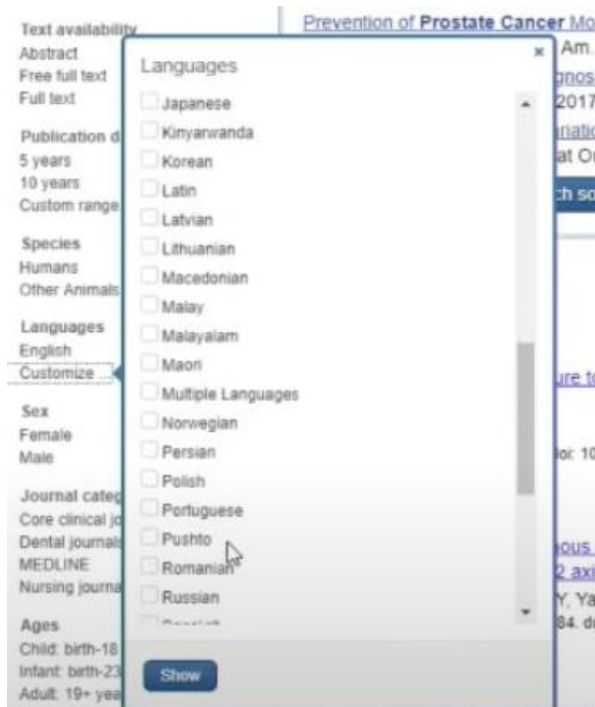
Figure 21. Languages.

You can choose sex if you are interested in a research conducted only among women or only among men. Thus, you receive additional search results.

Let us start with "article types", we may choose between "clinical trial" and "review" (Fig. 22). Customizing article types is feasible as well, you just need to check the boxes next to, for instance, "clinical conference", "clinical study", "clinical trial phase 1-4" etc.
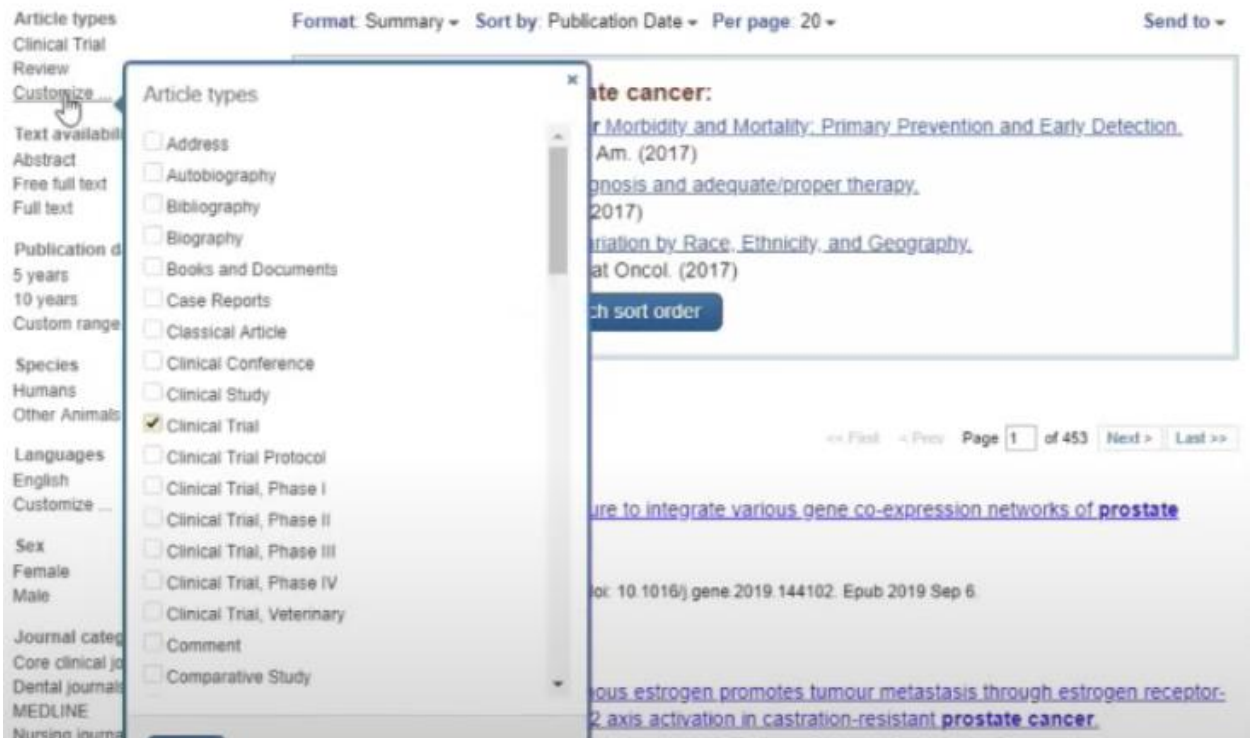
Figure 22. Article types.

By doing that, you are able to fine-tune your search the way you need. There is no such feature in Scopus.

Let us say you only need reviews on prostate cancer, so you click on "review" and get only reviews (Fig.23).
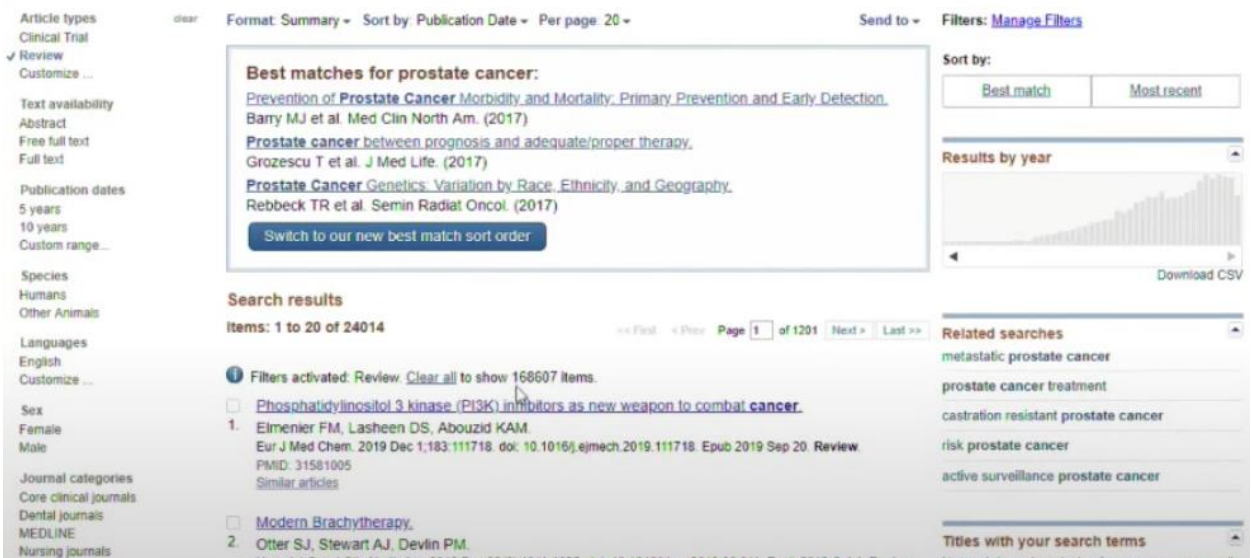
Figure 23. Filer activated: Review.

The next filter I want to discuss is "text availability". Put a check mark next to "free full text", and among your reviews (we have already put a check mark next to "reviews") you will see a list of articles that have a full-text version available (Fig.24).

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Figure 24. Filers activated: Review, Free Full Text.

All of them are full-text versions of review articles on prostate cancer. If you check the box next to "publication dates for the last 5 years", you will receive 2,800 review articles on prostate cancer over the past five years (Fig. 24).
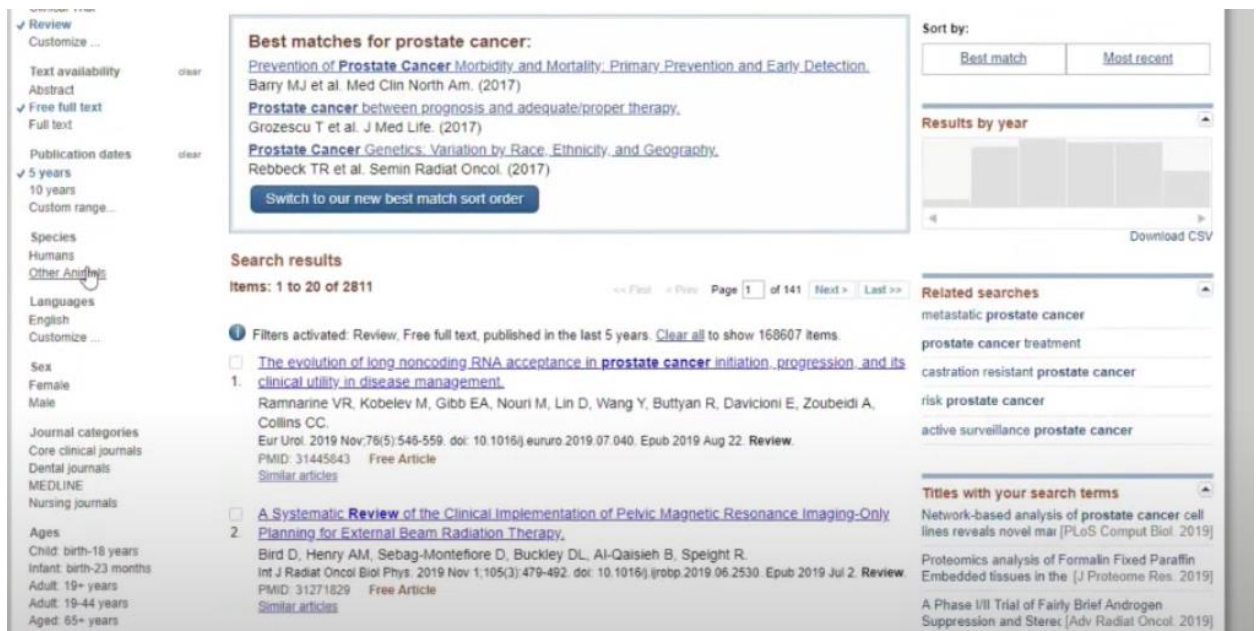
Figure 24. Filers activated: Review, Free Full Text, published in the last 5 years.

You can find animal studies on prostate cancer, but there are only 371 of them. If we click on "female", there are only 41 studies (Fig. 25). These results could be casuistic, or maybe some tricky studies were conducted on female animals.

Figure 24. Filers activated: Review, Free Full Text, published in the last 5 years, Other Animals, Female.

This variety of filters is an advantage of PubMed because it allows you to find the very publication you need.

Let us click on "clear all filters" and go back to those 168,000 publications on prostate cancer. We have already discussed the filters in the left sidebar and the block of information on the right side of this page. Let us click directly on a random publication and see what happens (Fig. 25).

Abstract
Aim To determine risk factors for deep vein thrombosis (DVT) in hospitalized patients in a 10-year follow-up. Methods In this observational study data were collected from the disease history of patients admitted to the Department of Angiology of the Clinical Centre University of Sarajevo in the period of 10 years (2008-2017). Of 6246 hospitalized patients, 1154 were with established diagnosis of DVT and included in the study as a basic inclusion criterion. Results Provoked venous thromboembolism was recorded in 45.75% of hospitalized patients. In 54.25% cases DVT was classified as idiopathic; in the remaining cases with DVT external risk factors were identified. Every fourth patient had a history of malignancy, and this risk factor was significantly more common among women and younger patients. Cancer of female reproductive organs, colon, lung, breast and prostate cancer were most common. One of 10 women had DVT during pregnancy or postpartum period. Out of the total number, 10.9% patients had DVT after surgery, 2.3% after injury. DVT was found in 1.6% of drug addicts. Rethrombosis was diagnosed in 5.2% patients within a year, while 9.2 % patients had rethrombosis within five years. Conclusion Provoked venous thromboembolism is an entity that can be prevented. Malignancy and surgical treatment are the most common risk factors and these patients should be treated with special care. The creation of a register of patients with venous thromboembolism in Bosnia and Herzegovina would enable the development of a preventive strategy in the groups of patients at risk.

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KEYWORDS: risk factors; thrombosis; treatment

PMID: 31402639   DOI: 10.17392/1038-20

Free full text

Figure 25. Provoked venous thromboembolism during ten-year follow up at the Clinical Centre University of Sarajevo.

You may see the title of the publication, the name of the journal, the date of publication (February 2020) as well as the inscription "Epub ahead of print". It means that this article had come out electronically before it was published in the paper journal. Information about the authors and the abstract itself is available as well. We are also interested in keywords, DOI and PMID. I want to remind you that PMID is a unique digital code of a particular publication in PubMed. In the upper right hand corner an inscription "free full text" is found, so you can click on this link and read the full-text version of the article. Here we have similar articles from earlier years (2019, 1997, 2014, 2011) on the same topic.

You have seen the basic interface, and now let us move on to the search tools. PubMed allows you to use the following **Boolean logical operators** and put them between search terms.

AND – if two or more terms should be found in the same document.

Let us take the terms "angina" and "scarlet fever". We type both of these queries and put "and" between them. If there is nothing between these two words, then by default PubMed searches as there is an "and" in between, so both angina and scarlet fever will appear in the search results, but not as a phrase.

So, when I type "prostate cancer", it does not mean that PubMed searches for "prostate cancer" as a phrase, it searches for "prostate" and "cancer", and results are going to include both "prostate" and "cancer". We have already seen one of the articles where not only prostate cancer was mentioned, but breast cancer as well.

OR – if at least one of the terms should be found in the document.

Figure 26. "OR" logical operator.

For example, the search query "angina or scarlet fever" means that in the search results there will be either "angina" or "scarlet fever", or both.

NOT – "angina", but not "scarlet fever". If you want to find a whole phrase and receive, for example, "prostate cancer" in the search results, then put this phrase in quotation marks as indicated here. For example, put "urinary incontinence" in quotation marks, and PubMed will look for the whole phrase (Fig.28).
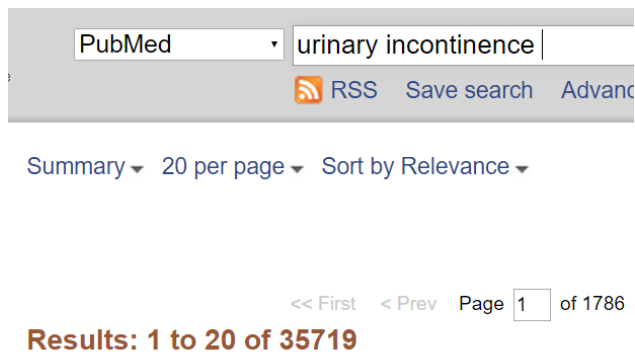
Figure 27. Search query: urinary incontinence.
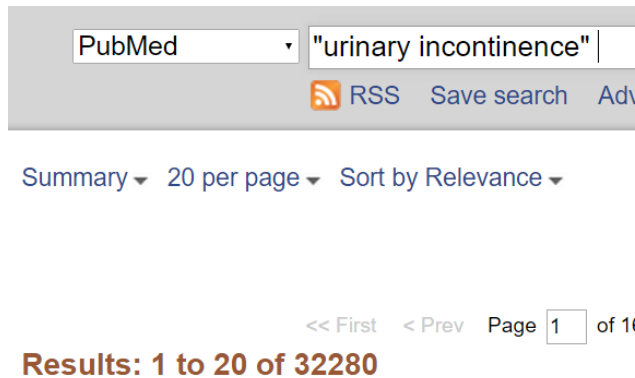
Figure 28. Search query: "urinary incontinence".

AND operator (an example)

If we enter Aspirin AND Children AND Reye's Syndrome, all three words must be present in search results, it cannot be only 2 out of 3.
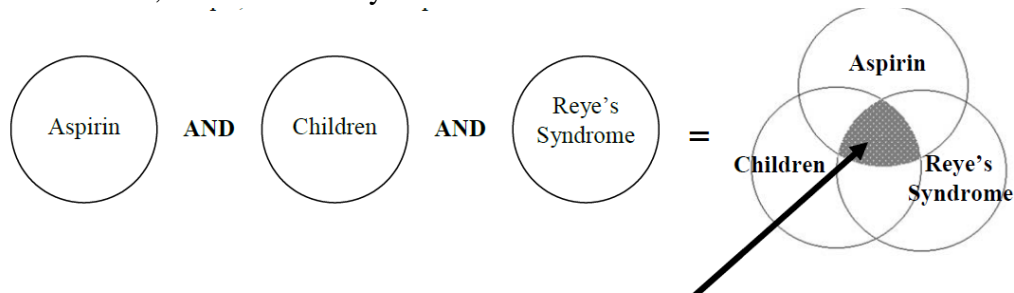
Figure 29. Search query: Aspirin AND Children AND Reye's Syndrome. A zone where these 3 spheres overlap will be the search results.

OR operator (an example)

We enter Kidney Disease OR Renal Diseases when we want to cover all publications on kidney diseases as broadly as possible, for example, while writing a systematic review.

A synonym for "Kidney Disease" is "Renal Diseases", for instance. Thus, if we put an "or" operator between these phrases, we will have both of them included in the search results.

Figure 30. Search query: Kidney Disease OR Renal Diseases.

When we enter "urinary AND incontinence", both words are going to be present in the search results (27361 publications). If we enter "urinary OR incontinence", then either one of these words or both of them are going to be present in the search results (685069 publications).
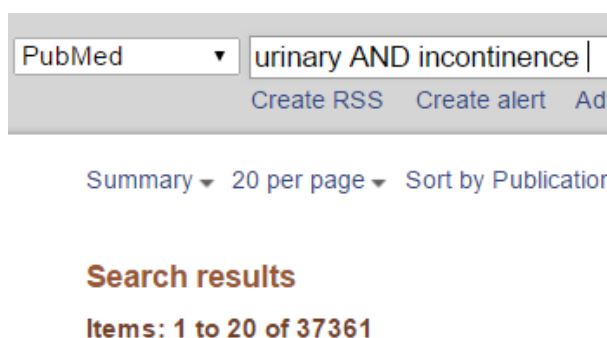
Figure 31. Search query: urinary AND incontinence.
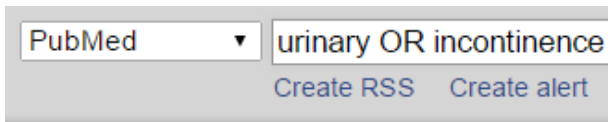
Figure 32. Search query: urinary OR incontinence.

NOT operator (an example)

If we are interested in patients with dementia but without Alzheimer's disease, we write "Dementia NOT Alzheimer's". In the search results, Alzheimer's disease will be excluded and we will see articles on patients with dementia who do not have Alzheimer's disease. In the picture, we see a shaded sector (Fig. 33), the one that will be included in the search results.
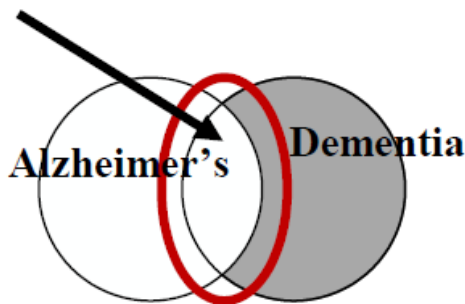
Figure 33. Search query: Dementia NOT Alzheimer's.

We can make complex queries, for example, Diet Therapy AND (Bulimia OR Anorexia) means that we are interested in diet therapy for either bulimia or anorexia (Fig. 34).

If the query is Diet Therapy AND Bulimia OR Anorexia, then the search results become broader because we put OR before the word anorexia, so all articles that mention anorexia will be included in search results (Fig.35).
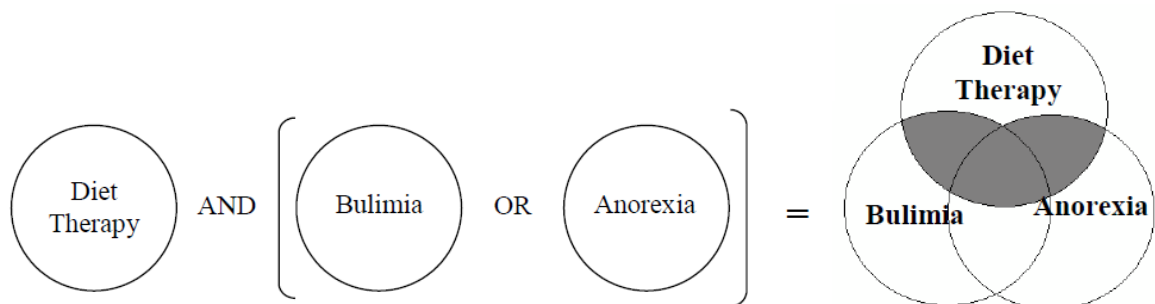
Figure 34. Search query: Diet Therapy AND (Bulimia OR Anorexia).
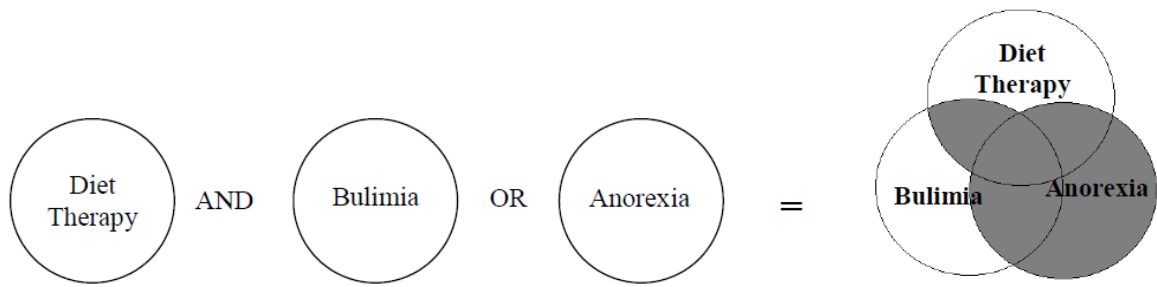
Figure 35. Search query: Diet Therapy AND Bulimia OR Anorexia.

Truncation is another useful tool. Let us use the word *bacter* as an example. If you ***put an asterisk at the end*** of the word *bacter* (bacter*), then PubMed will find such words as bacteriology, bacteria, bacterias, bacterial etc., so all words with a particular set of letters preceding the asterisk. In some cases, it is a very convenient and useful tool.

Let us discuss **Advanced Search Builder**. Here, for example, you can add several search boxes by clicking on the + (Fig.37).
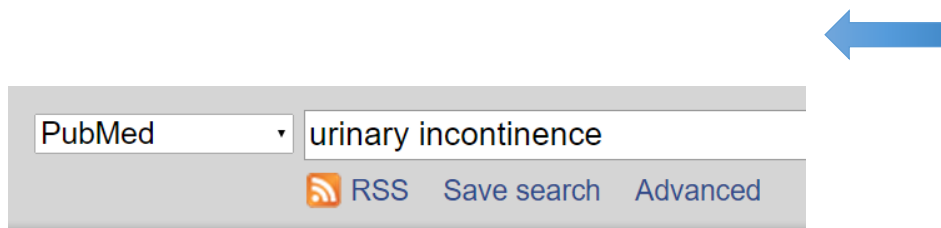
Figure 36. Advanced Search Builder.
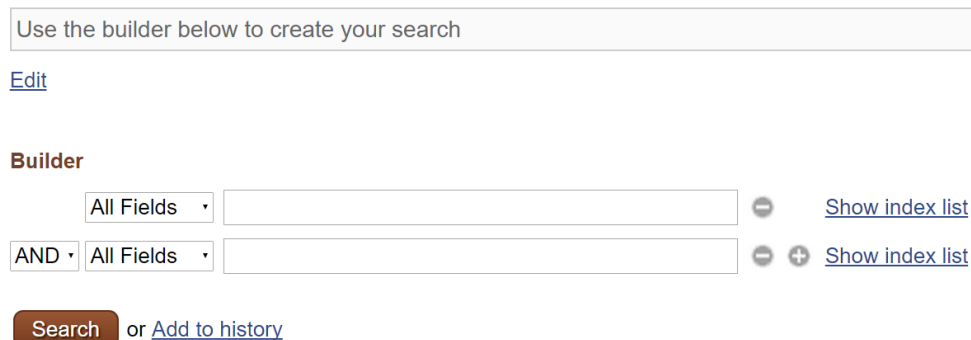
Figure 37. Advanced Search Builder 2.

In the first box, you search by title, for example, "urinary incontinence", in the second one you exclude "faecal", so articles that include faecal incontinence will be excluded from the search

results. In the third search box you may choose the publication dates – 2010 to present, and in the fourth one – the phrase "stem cells" in the title or abstract (Fig.38).

Figure 38. Advanced Search Builder, an example.

Figure 39. Complex query created with Advanced Search Builder.

Such queries are called complex not because they are difficult to create, but due to setting up several filters at once: you exclude "faecal incontinence", limit the time interval and also make the phrase "stem cells" appear in this request.

Here are some examples of complex queries (Fig. 40).

Figure 40. Complex queries, examples.

Before we move on to a discussion of MeSH, I will show you some examples of how it all looks in PubMed. Let us go back to the main page. If we enter "prostate cancer" in the search box, we will see 168,000 publications (Fig.41).
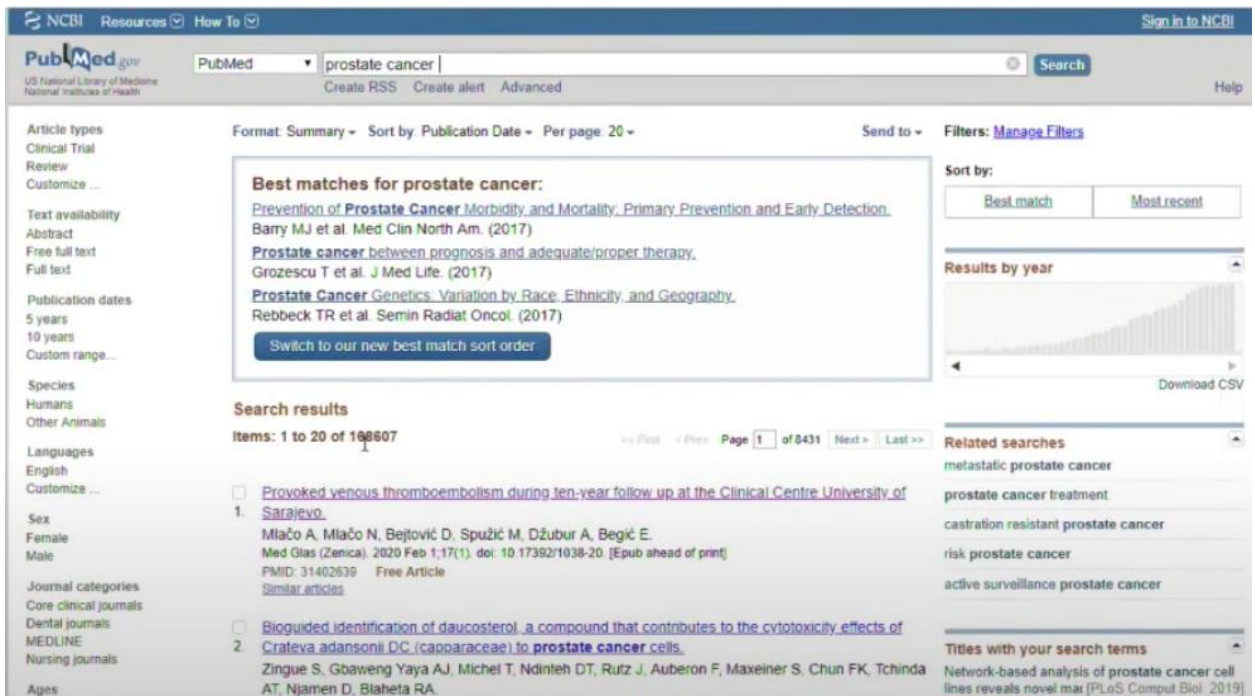
Figure 41. PubMed: Prostate cancer.

If we enter prostate AND (in capital letters!) cancer, we will receive 152000 articles. I think it is due to some errors in the search algorithm, but approximately the number of articles is the same.

If we enter prostate OR cancer, we will receive 3992622 publications (Fig.42).

Figure 42. PubMed: Prostate OR cancer.

If we enter prostate NOT cancer, then there will be 36595 publications displayed in the results (Fig. 43).

Figure 43. PubMed: Prostate NOT cancer.

Let me remind you that there were 168000 publications on prostate cancer, in this case PubMed was looking for both "prostate" and "cancer". If we put "prostate cancer" in quotes, then instead of 168,000 we will get 111,000 publications, so this tool reduces the search area and we can immediately cut off articles that do not interest us using these quotes. We are only interested in

articles with the phrase "prostate cancer" either in an abstract, or in keywords, or in the title of the publication.

Figure 44. PubMed: "Prostate cancer".

MeSH

MeSH means network. *MeSH Search - search by subject headings*. With the help of the database of subject headings Medical Subject Headings (MeSH), you can select the most accurate term from the thesaurus that expresses the content of the search query. Using MeSH increases the completeness and accuracy of the search.

For instance, we enter "prostatectomy" into the search bar, but now we are looking for this query in MeSH, not in PubMed. In order to do that, select MeSH in a drop-down menu (Fig. 45).

Figure 45. Search query in MeSH.

The search results will be displayed as follows (Fig. 46). There are only 2 categories that are dedicated to prostatectomy in MeSH. We click on "prostatectomy" (Fig. 47).

Figure 46. MeSH: prostatectomy.

Here is the definition of prostatectomy - it is a complete or partial surgical removal of the prostate gland. You can also see subheadings here. Thus, you can search for everything related to prostate removal in terms of adverse effects, analysis, blood issues, classification, complications, economics, education (for example, how long does it take to learn to perform prostatectomy), epidemiology, ethics, etiology and so on.

Figure 47. MeSH: prostatectomy 2.

In order to create MeSH PubMed employees have to read abstracts of every incoming publication and assign a label according to this classifier. That means that they read the article on prostate cancer, saw that side effects and classification were mentioned in it and put these two tags. This publication's heading will be "prostatectomy" and it will be found only if you are looking for side effects and classification. MeSH is a great tool that undergoes expert processing, that is why it is so valuable.

Here is the MeSH tree (Fig. 48).

All MeSH Categories

    Analytical, Diagnostic and Therapeutic Techniques and Equipment Category

        Surgical Procedures, Operative

           Urogenital Surgical Procedures

             Urologic Surgical Procedures

               Urologic Surgical Procedures, Male

                 Prostatectomy

                   Transurethral Resection of Prostate

                   Ultrasound, High-Intensity Focused, Transrectal

Figure 48. MeSH tree.

So, we have descended to the category of our interest. Not every request is indexed with MeSH terms, but a lot of them are. For example, we are interested in school health.

There are 3 MeSH categories: School Health Services; Schools, Public Health and Schools; Health Occupations (Fig. 49).
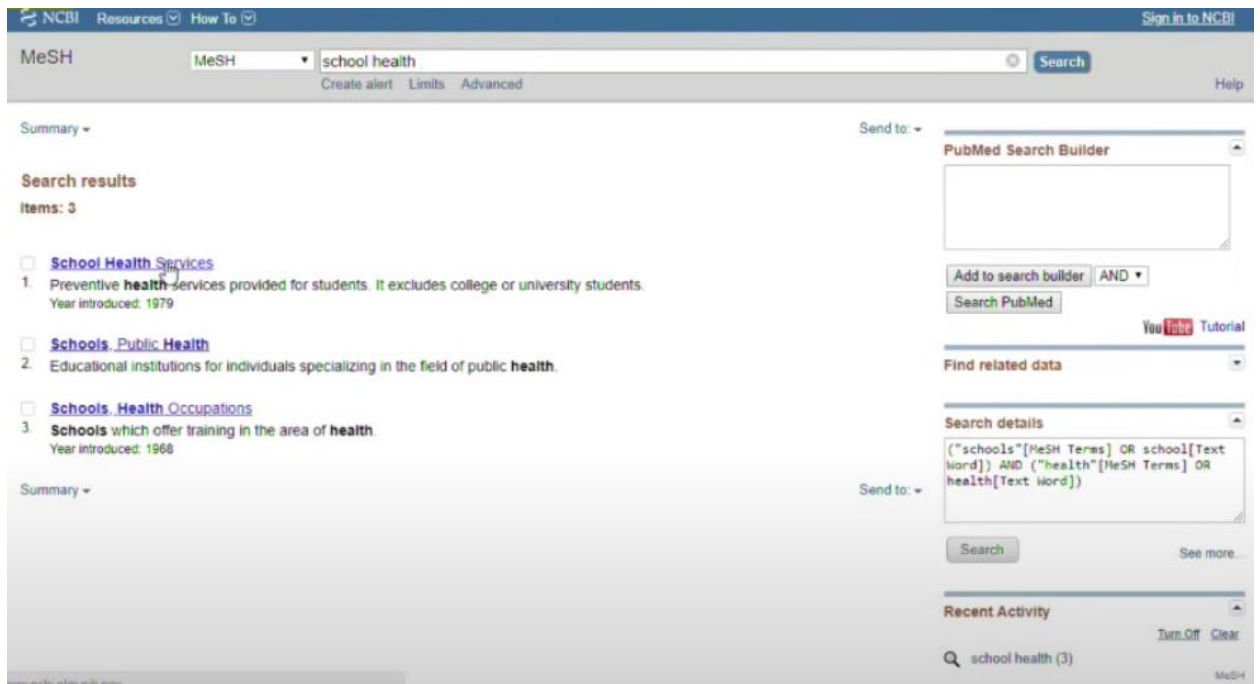
Figure 49. MeSH: school health.

If you are looking for services that ensure the health of schoolchildren, for example, you should click on "School Health Services" and then look for history, ethics, involvement of nurses in the process, organization and administration, etc. That is how you can find MeSH for a lot of queries and structure you search.
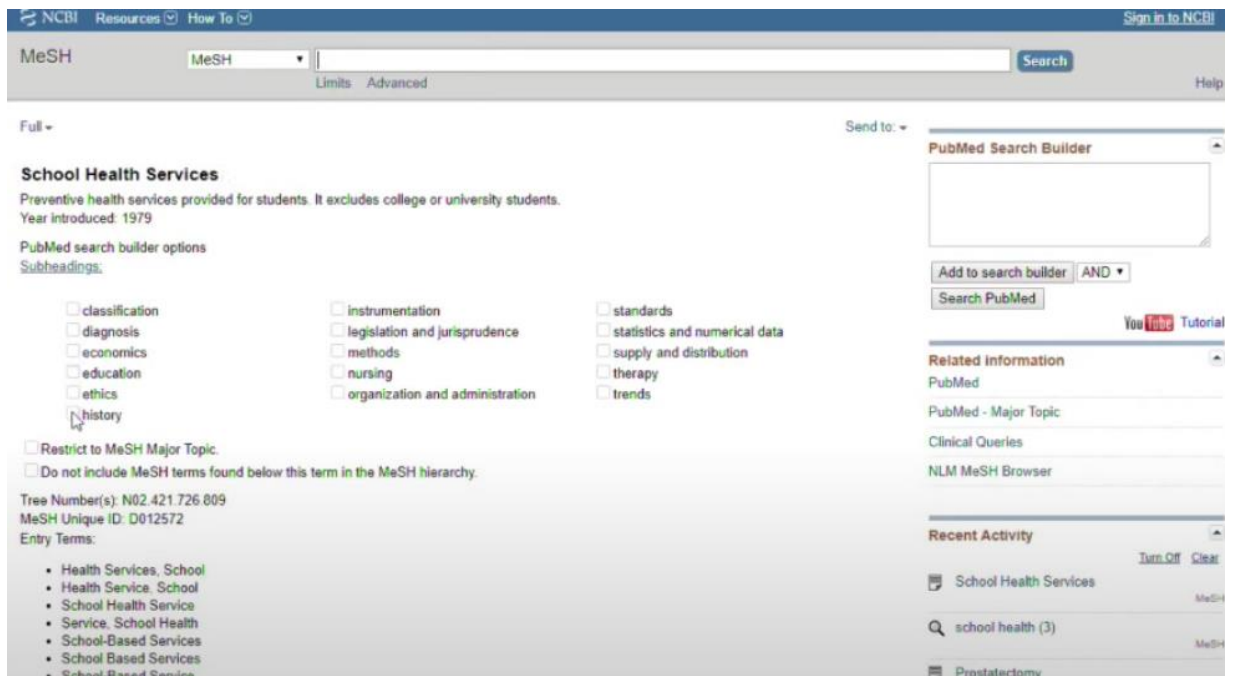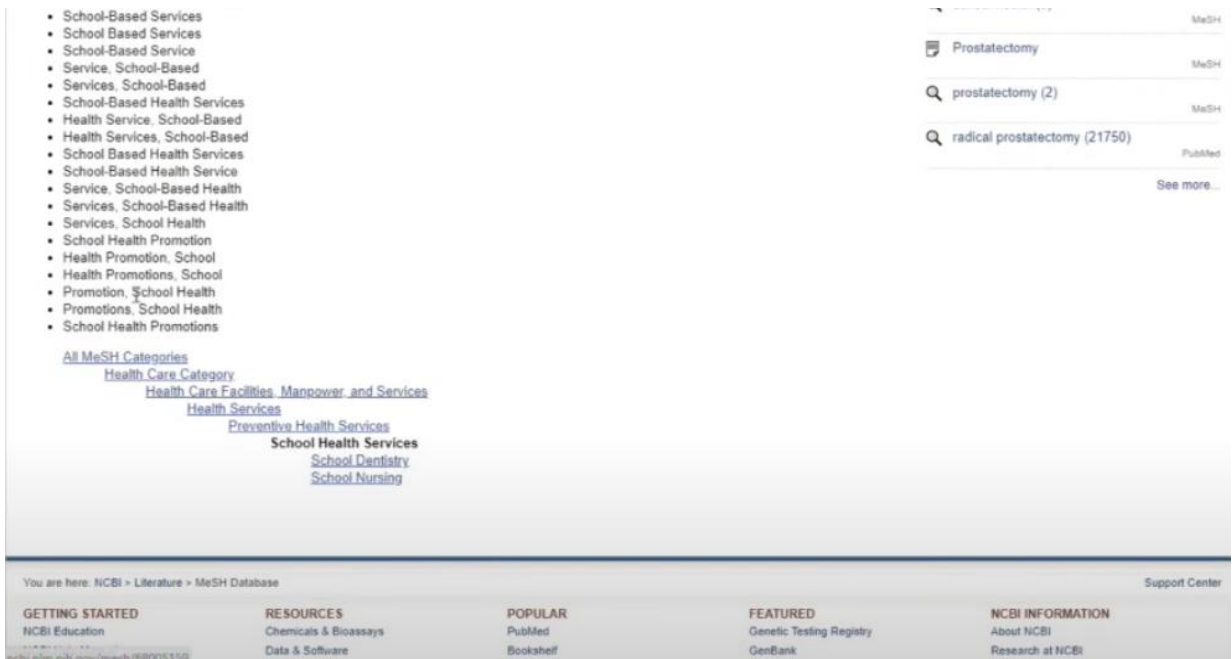
Figure 50. MeSH: school health 2.

Imagine that we are interested in school health services in terms of history. I just clicked on history and added "School Health Services"[Mesh]. Next, click on "Add to Search Builder" and "search PubMed" (Fig. 51, 52).

Figure 51. PubMed Search Builder.
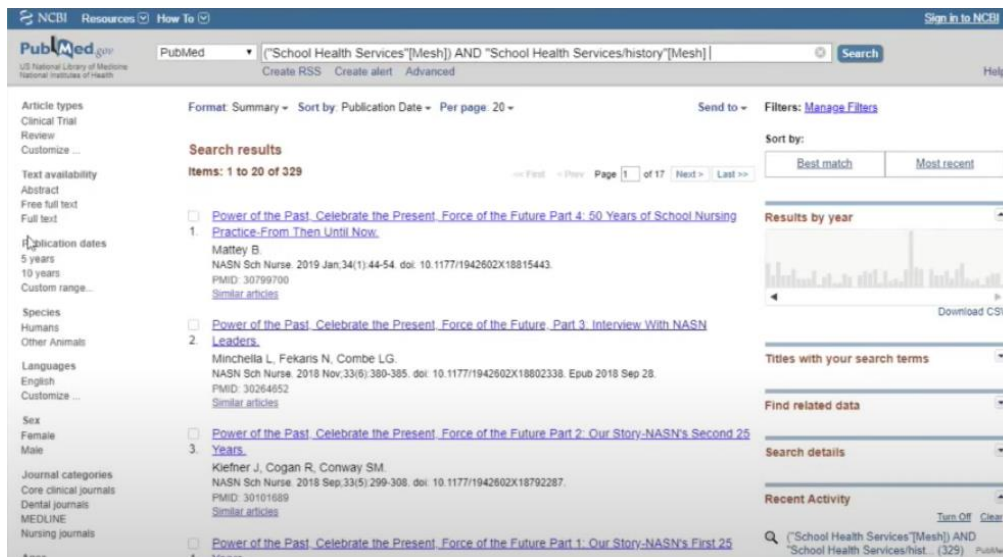
Figure 52. PubMed, search results.

There are 329 publications in total, all of them are devoted to the health of schoolchildren from the historical perspective. Let us look at our final search query. It is difficult to build this type of query yourself: you need to open a parenthesis, then quotes, then enter School Health Services, close the quotes and add the inscription [MeSH], close the parenthesis, enter AND "School Health Services/history"[Mesh].

Of course, it is possible to form this request, but you can easily make a mistake. As you can see, this request is already implemented in PubMed. .

Thus, *MeSH is a vocabulary thesaurus used for manually processing and labelling publications, so you can form a better request and get more accurate results.* There is a citation tool in Scopus for you to rank articles as "the best" or "the worst" based on their citation level. In PubMed, you cannot use this tool, but you can employ MeSH that will help focus your search on exactly what interests you.

NCBI

Click on "Register for an NCBI account", enter your username, password and other data and create your account. As a result, you can have your own page in NCBI where you can upload your search results, arrange your own bibliography, and so on.
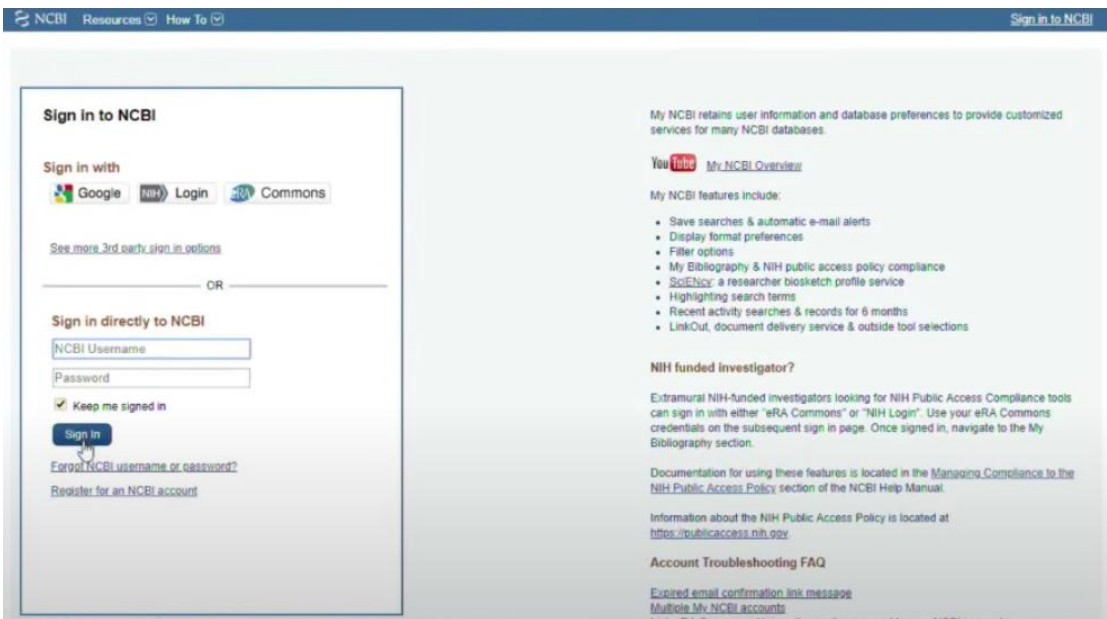
Figure 53. Sign in to NCBI.
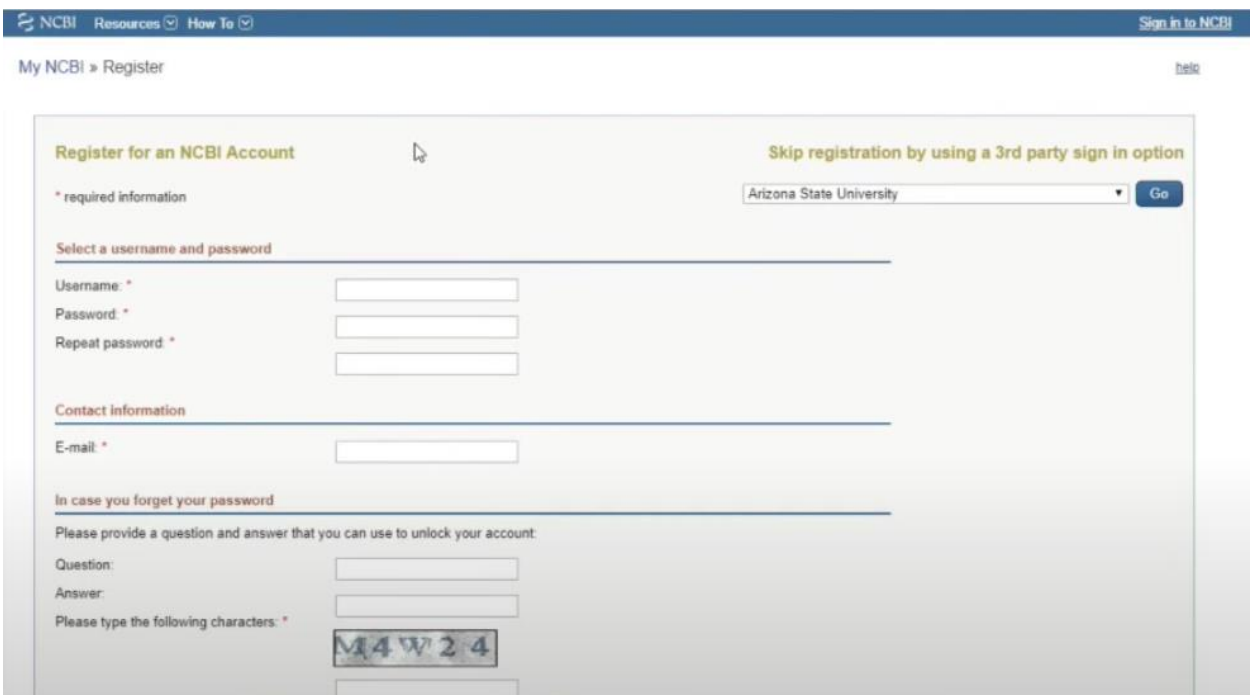
Figure 54. Sign in to NCBI 2.

INTERNATIONAL RANKING

 As you know, the goal of our university is to become a world–class research medical university. We understand the meaning behind the words "medical" and "research", but what does "world-class" mean? What criteria are used to assess universities?

This is not a trivial question, but it is clear that Cambridge, Oxford and other universities like these ones are world-class. If the university is not well known, it is not a world-class university. How do we determine whether a university is world-class or not? It is a difficult issue that is solved by generally accepted world rankings. If a person receives a Nobel Prize, we never doubt whether they are "world-class" or not. The experts evaluate the contribution of a scientist and award them with a prize, a certain quality mark.

Thus, there are tools that are used to evaluate universities from this standpoint and determine which of them are better and which are worse.

 To be more exact, there is only one tool - *international ratings*, the three main ones are *Times Higher Education*, *RU*, and *QS*. QS are the initials of the author of this ranking system. All of these ranking systems are rather interesting, but we are going to talk only about QS and discuss some basic points. Why do you need this information? If we want to become a world-class university, we need to understand that we must get into the ranking system. Fortunately, we have already done that as well as RNIMU. We occupy almost the same place, but it is important to understand that out of 500 medical universities MSMU is at the very bottom, so our goal is at least to stay in this place and in the best-case scenario improve out rank. It is not an easy task. In order to raise our ranking we must understand the evaluation criteria.

Why am I going to talk about QS? The ranking is mainly based on the Scopus data that we also use to evaluate the effectiveness of the publication activity.

Let us hover the cursor over the inscription "rankings" and click on " QS World University Rankings" (Fig 1).

Figure 1. QS, a main page. https://www.topuniversities.com/university-rankings
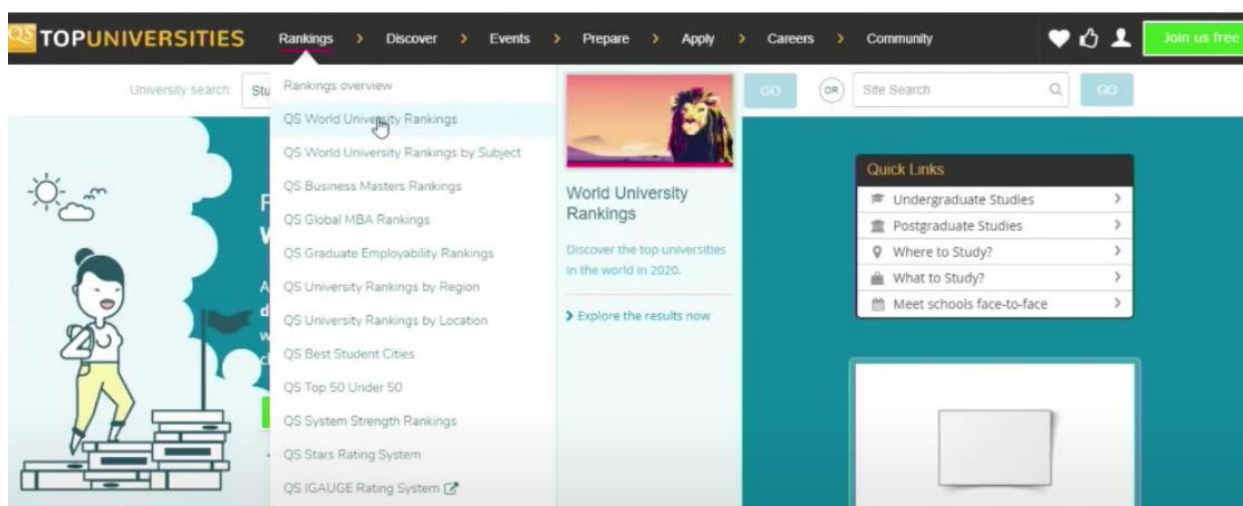
It includes comprehensive universities that offer such disciplines as Physics, Chemistry, Biology, maybe Medicine, Law and so on. These universities are large. The top three of them are listed below – MIT, Stanford University, Harvard University, all of them are American (Fig.2).
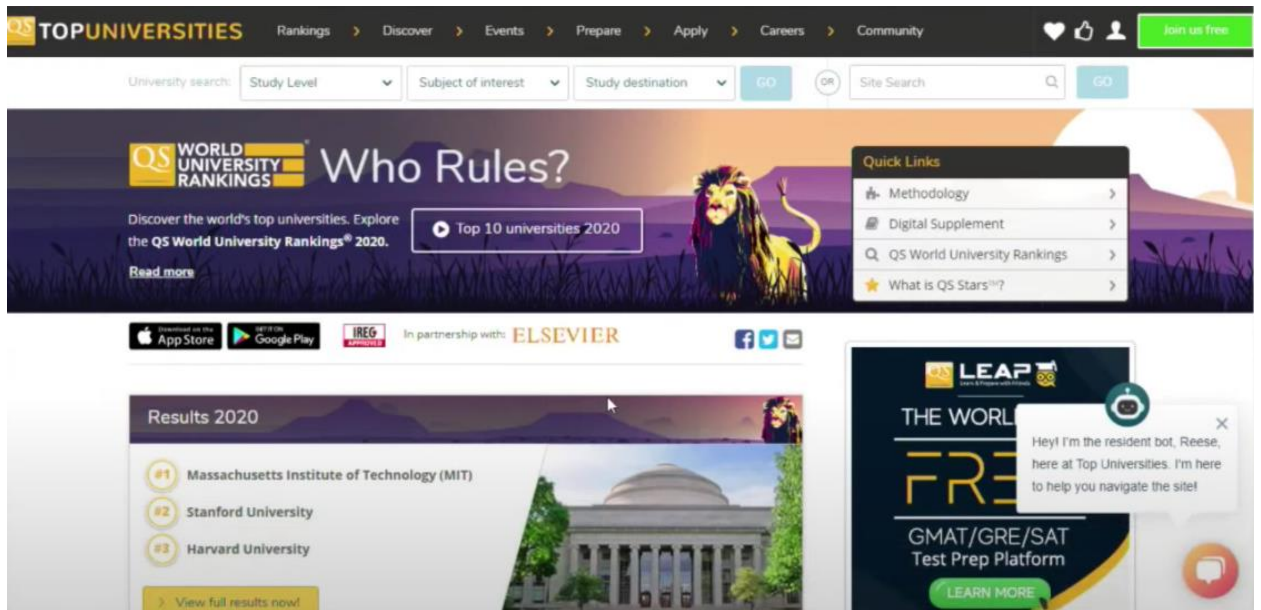
Figure 2. The best universities of 2020.

Click on "view full results now". A list of 1000 universities appears in front of us. This ranking system analyzes the universities that submit applications that meet formal criteria, but only 1000 of them are included in the ranking. You can see which universities are in the top 10 best universities in the world: University of Chicago (10), Imperial College London (9), UCL (8), University of Cambridge (7), ETH Zurich (6), Caltech (5), University of Oxford (4), Harvard University (3), Stanford University (2), MIT (1). All these universities are located in the USA and the UK, and only one of them is from Switzerland (Fig. 3).
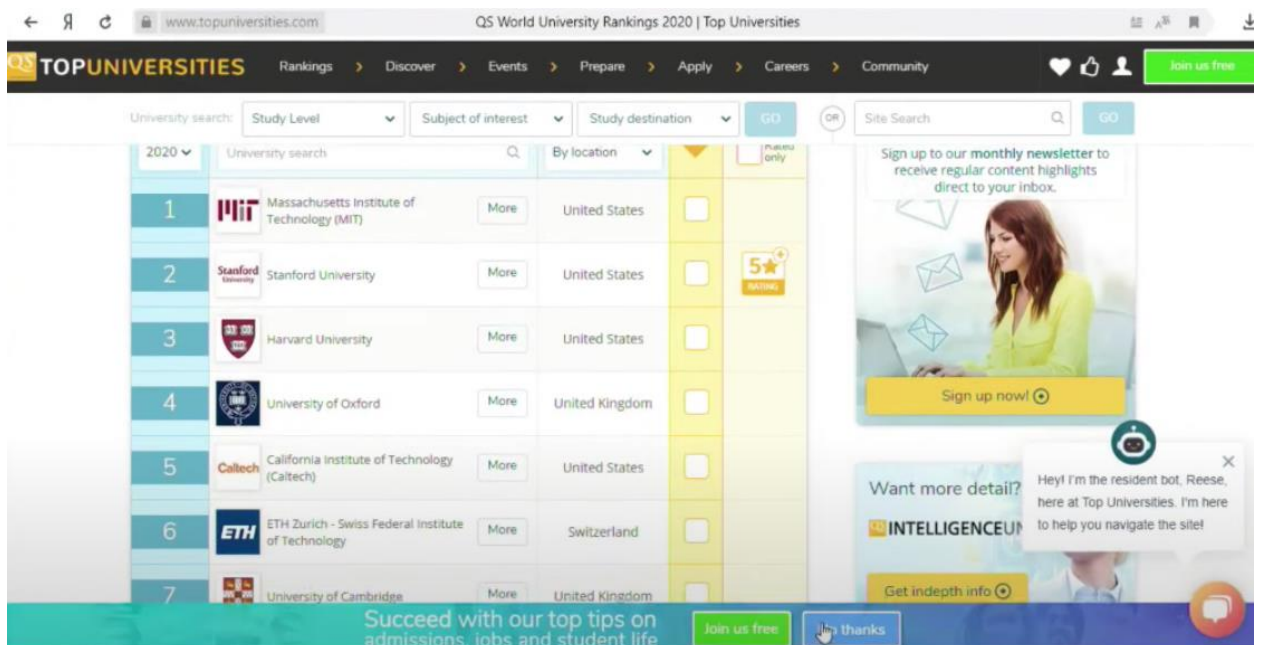
Figure 3. The best universities of 2020, a full list.

If the university is in the ranking, then it is a world-class university. Of course, a lot depends on university's position in the ranking as well.

Ranking indicators offer some additional information (Fig. 4,5). Based on this information, QS evaluates the significance of a university.

# RANK	UNIVERSITY	OVERALL SCORE	CITATIONS PER FACULTY	INTERNATIONAL STUDENTS	INTERNATIONAL FACULTY
1	Massachusetts Institute of Technology (MIT)	100	99.8	94.1	100
2	Stanford University	98.4	98.6	67.7	99.8
3	Harvard University	97.4	99.6	62.2	86.3
4	University of Oxford	97.2	84.7	98.5	99.7
5	California Institute of Technology (Caltech)	96.9	100	87.3	99.4
6	ETH Zurich - Swiss Federal Institute of Technology	95.9	98.4	98	100

Figure 4. Ranking indicators.

# RANK	UNIVERSITY	INTERNATIONAL FACULTY	FACULTY STUDENT	EMPLOYER REPUTATION	ACADEMIC REPUTATION
1	Massachusetts Institute of Technology (MIT)	100	100	100	100
2	Stanford University	99.8	100	100	100
3	Harvard University	86.3	98.7	100	100
4	University of Oxford	99.7	100	100	100
5	California Institute of Technology (Caltech)	99.4	100	81.2	97.8
6	ETH Zurich - Swiss Federal Institute of Technology	100	85	96.7	98.4

Figure 5. Ranking indicators 2.

MIT's overall score is 100 (out of 100) – the highest score, Stanford - 98.4. Harvard – 97.4, they are next to each other. Now let us move on to QS evaluation criteria: Faculty citations (the number of citations divided by the number of employees), foreign students, international faculty, faculty student, employer's reputation (according to a survey of employers), academic reputation (according to a survey among scientists and their opinion on which university is the best). These indicators are used to evaluate comprehensive universities. Sechenov University is not a comprehensive university, and it is both an advantage and a disadvantage. We are a medical university with some additional areas of competence in Mathematics, Artificial Intelligence, Biomedicine etc. Therefore, we are not a classical university, and there are many universities like us. Some universities' specialization mostly lies in Physics, others in engineering or something else. That is why QS World Rankings by Subject exist.
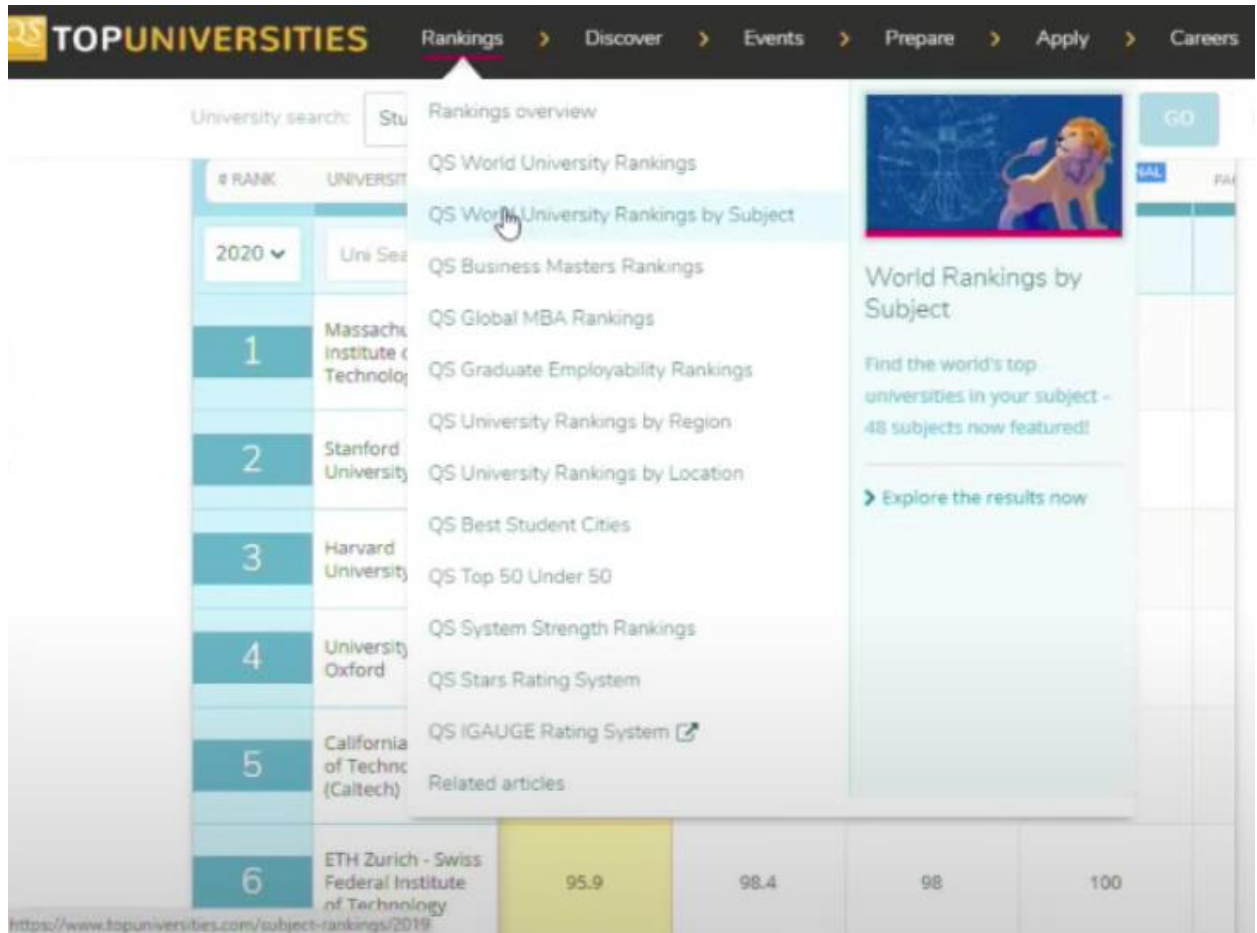
Figure 6. QS World University Rankings by Subject.

There are 5 categories: Arts and Humanities (No. 1 - Oxford University), Engineering and Technology (No. 1 - Massachusetts Institute of Technology), Life Sciences and Medicine (No. 1 - Harvard University), Natural Sciences (No. 1 - Massachusetts Institute of Technology), Social Sciences and Management (No.1 - Harvard University).

Figure 7. Art and Humanities.

Figure 8. Engineering and Technology.

Figure 9. Life Sciences and Medicine.

Figure 10. Natural Sciences.

Figure 11. Social Sciences and Management.

Of course, we are interested in the "Life Sciences and Medicine" category., Let us see the full list (Fig.12). The top 10 universities vary from the previous list: Harvard University (1), Oxford University (2), Cambridge University (3), Stanford University (4), Johns Hopkins University (5) and so on.

Figure 12. Life Sciences and Medicine, a full list.

If we look at the Rankings Indicators, they will differ from those we have just discussed (Fig. 13,14). There are only 4 of them.

Figure 13. Ranking indicators. Comprehensive universities.

Figure 14. Ranking indicators. Comprehensive universities 2.

The first one is "academic reputation". How can we improve it? First of all, the university must be of good quality, such that when a Cambridge medical expert or scientist is asked "What is the best medical university in Russia?", they answer "Sechenov University". And if asked "And is this university among the top 100 medical universities in the world?", they would answer that it is indeed so. Academic reputation is based on these surveys. Of course, it is difficult to influence this situation somehow because we do not know who will receive the request and this person's answer, so our university just must be good. The second indicator is an "employer reputation". The remaining indicators are more related to science – "citations per paper" and "h-index citations". To calculate "citations per paper", you need to divide the number of citations of our university for a certain period of time by the number of publications for the same period of time.

We are interested in making the numerator as high as possible and the denominator not excessively large. In Q4 journals the denominator is large so the "citations per paper" indicator eventually becomes low. That's not what we are interested in. A large number of publications (even in Scopus) but in the fourth quartile leads to a drop in "citations per paper". I already showed you the H-index of the organization at the last lecture.

Now let's find our university in this ranking: Rankings - QS World University Rankings by Subject – Life Sciences & Medicine – View Dull List. Select a subject: Medicine.

We see a list of 500 universities. In the search bar we enter "Sechenov University" (Fig. 15).
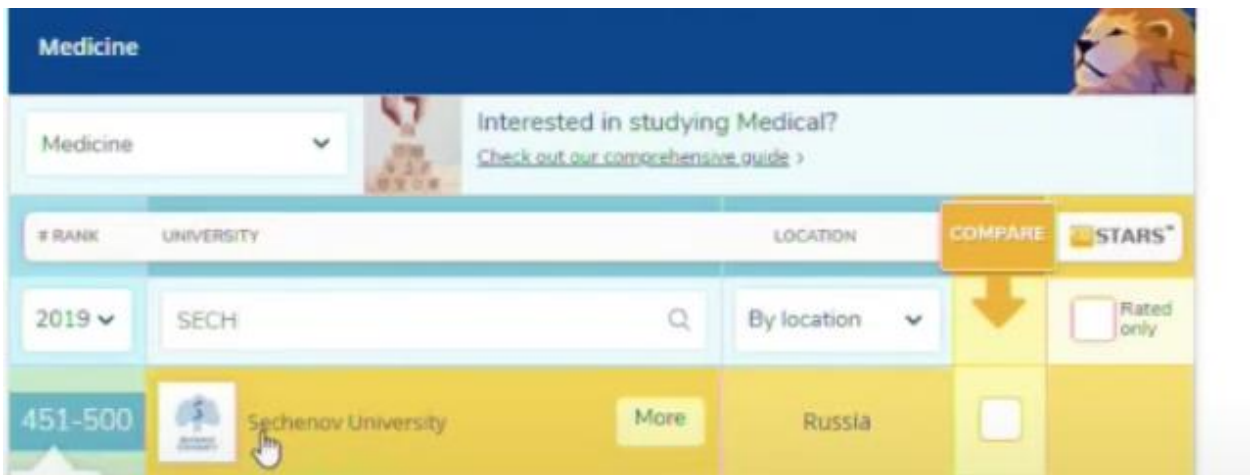
Figure 15. Sechenov University, QS World University Rankings by Subject.

Sechenov University is ranked #451-500. Of course, it is worse than being in the top 100, but better than being out of the ranking. Thus, we formally meet the criteria of a world-class university. Our university is also ranked in Times Higher Education. Here's our university's main page (Fig.16,17).
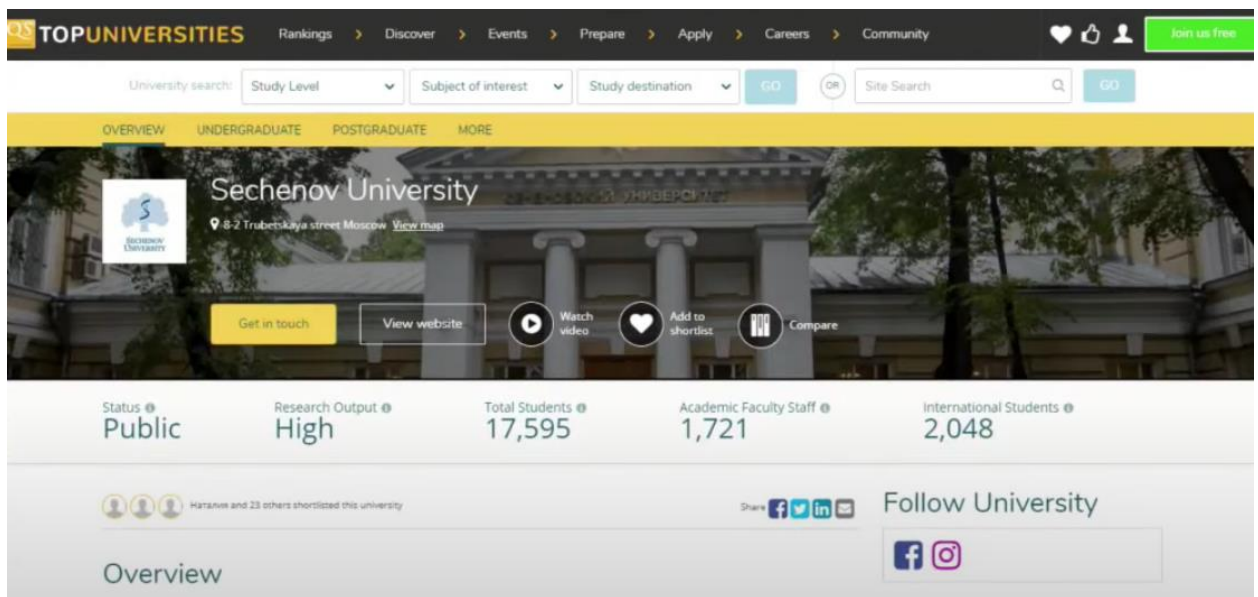
Figure 16. Sechenov University, a main page.
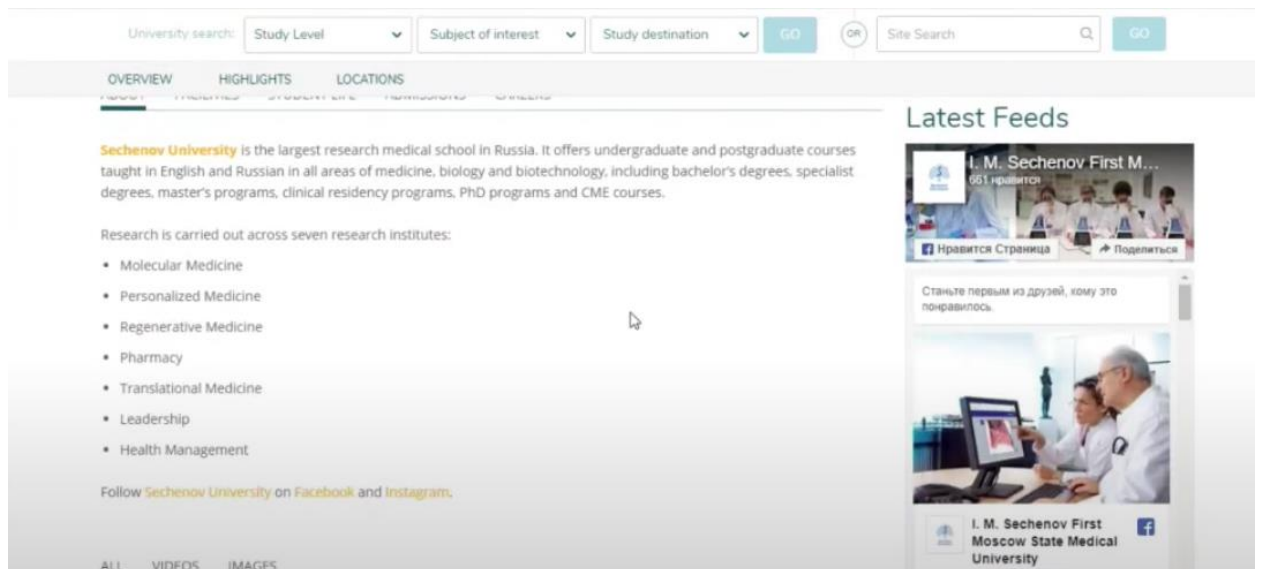
Figure 17. Sechenov University, a main page 2.

You can see who else is present in this ranking by limiting the search to Russia and so on.

Why am I telling you this? I would like you to understand that if we want to be a world-class medical research university, we must have an increasing Hirsch index and a lot of highly cited publications. The Hirsch index should be approximately higher than 40-50 over the past five years and we should focus on the number of citations. Low quality, poorly cited publications, even in Scopus, pull us down.

Scientometrics: Focus on the Scopus database

after Andrey Loktev, analytical consultant, Elsevier

Let us begin with understanding what this database is. Scopus is an abstract database that contains abstracts of scientifically reviewed sources, i.e., all literature that has been reviewed by experts and has been published in scientific journals, books, books of conferences' abstracts. All metadata of individual publications, with the exception of full texts, is indexed in the database. Currently, Scopus is the largest database, it contains more than 43685 journals in all scientific fields.

Scopus database was created in 2004, the main requirement being to create a database with no preferences in terms of individual scientific fields, languages, countries, etc.

Elsevier, the creator of Scopus, indexes articles in more than 70 different languages. It indexes journals in more than 330 scientific fields from almost all countries where scientific research is conducted. You may ask me how this database differs, for example, from Google Scholar. Why
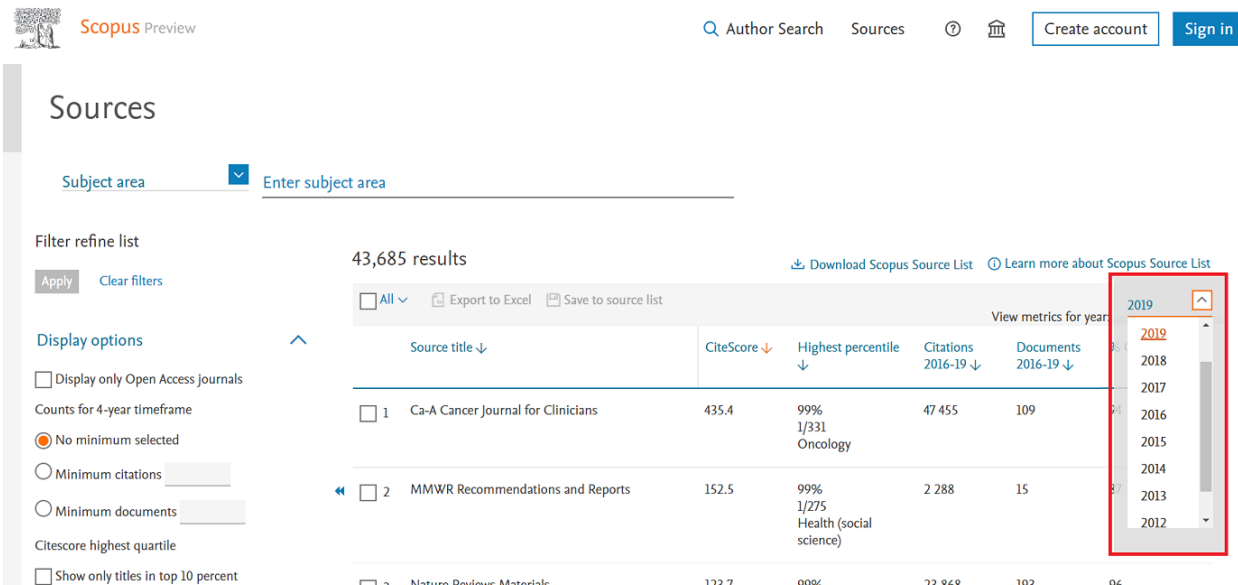
should we subscribe to Scopus? The main difference is that Scopus has been created as a professional tool for the researcher. Let me explain this.

In Scopus only high quality content is included, which is guaranteed by its selection by the Content Selection & Advisory Board before being indexed. The Board consists of the scientists and researchers, each being responsible for a certain scientific discipline, a certain research field. The Board members evaluate the content of the journals that want to be indexed in the database.

If the level of publications in these journals is not high enough to be included in the international database, then Board refuses to index it. If the Board considers the journal high quality, then the journal will be indexed automatically, but it does not mean that it will stay in the database forever. The Elsevier team constantly monitors the quality of the sources and periodically excludes the sources that no longer meet the requirements. This is something that you have to know, especially when choosing the journal to publish your article in.

Now, we will discuss how we can check whether the journal is currently indexed or is no longer indexed in the Scopus database. The important characteristic is that this database contains only reviewed content. The second important characteristic, which is quite easy to notice while searching, is that the database guarantees us a certain reproducibility of the results.

For example, filter by certain years or use any other filter (Fig. 1).

Figure 1.

Actually, the idea was to create a scientific tool for any researcher, a scientific tool that would allow you, regardless of the subject area, to search through scientific literature and do it on one platform. Therefore, you do not have to search for some information in one database, other information in another, but do it on one platform.

This implies another specificity of Scopus – it is a single database, so unlike other databases you may know, Scopus does not have archival data or some subject collections that some users have but others do not. All we see here is a complete database available for any scientist in the world.

To publish an article in a high quality journal normally takes time.
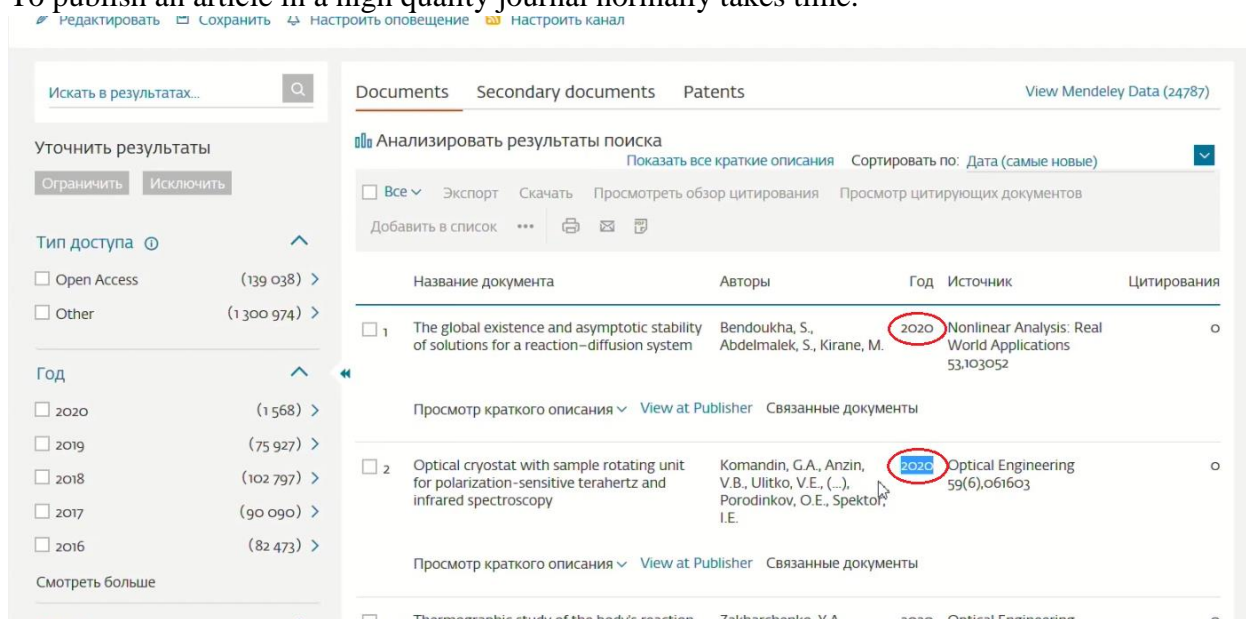
Figure 2.

If, for example, you received a letter from a journal that your article had been accepted, most likely they would tell you that in 2019, all the issues were compiled and they could only publish your article in one of the issues in 2020 (see Fig 2, as an example). Nevertheless, Scopus has the agreement with all leading publishers that such articles (article in press) can be published online before their paper copy is printed, that is why we can see the 2020 articles in 2019.

Let us go back to the search capabilities and the contents of the database. First, we need to discuss the way you can access the database. There is no need to be logged in to some special account of yours, you can just type in the browser **www.scopus.com** and get full access to the system.

What should you do if you work, for example, from home? The ideal option is to register and log in from home under your personal username and password. Now all Elsevier products, not only Scopus, but also our full-text databases ScienceDirect, Mendeley and many others are combined by a single authorization system. That means that if you have a login and password in one of the systems, you can click "Sign In" (Fig. 3), enter your data and register (Fig. 4).

Figure 3.
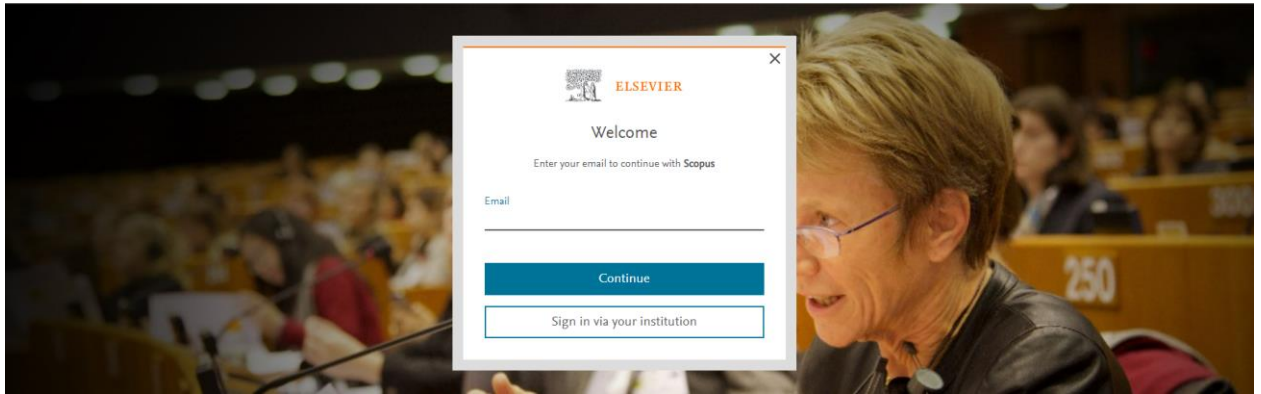
Scopus

Figure 4. Scopus Login Page https://id.elsevier.com/

If you have never done this before, I highly recommend doing it through "Create account" (Fig. 5).
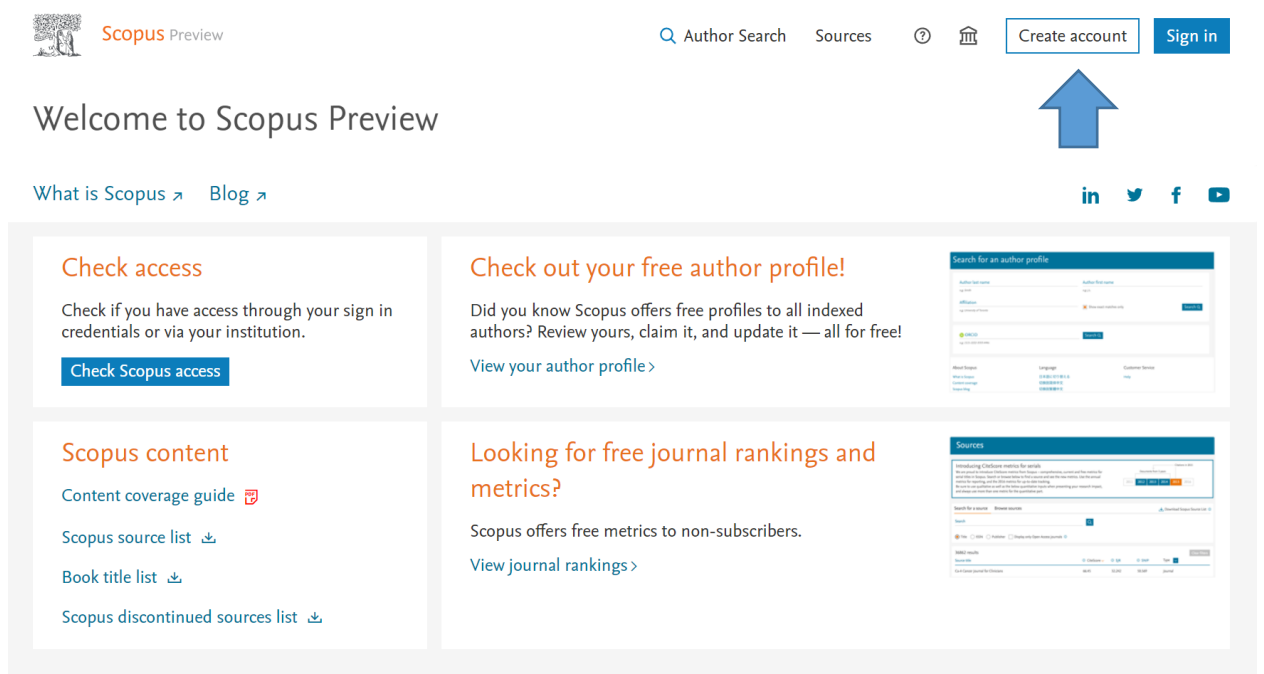
Figure 5.

One of the most popular information blocks is the block associated with the **Sources** (Fig. 6).

Figure 6.

Frequently asked questions are as follows: "Is the source indexed in the database? How can I check it? Where can I find up-to-date lists?". We recommend using the "Sources section", which is in public access section in Scopus. Even if you do not have the remote access, it will still be available for you. You can see the journals that are indexed in the Scopus database for this and last year.

Scopus selects the journal to be included in the database at the time of the application submission. Any journal can apply. Scopus team checks its scientific quality. If everything is fine, the journal is indexed automatically. To submit an application the journal should identify the subject categories to which it will refer itself. This is a standard Scopus classifier (Fig. 7).

Figure 7.

Let me give you an example. We can scroll down to medicine and select any field. Let us choose *Epidemiology* (Fig. 8).
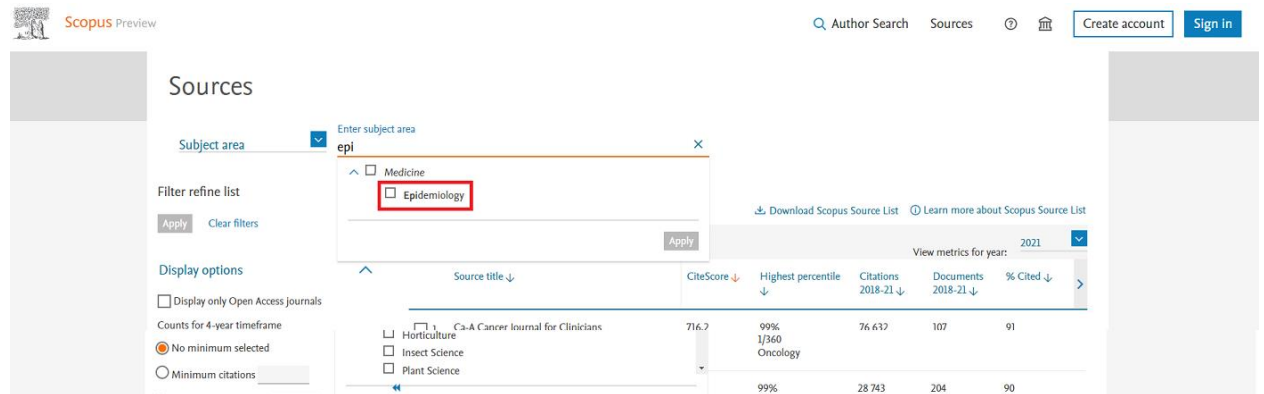
Figure 8.

We can open and see which logs are in this field. 133 sources are indexed in this area in total. They are ordered by the value of the CiteScore indicator from the highest to the lowest (Fig. 9).
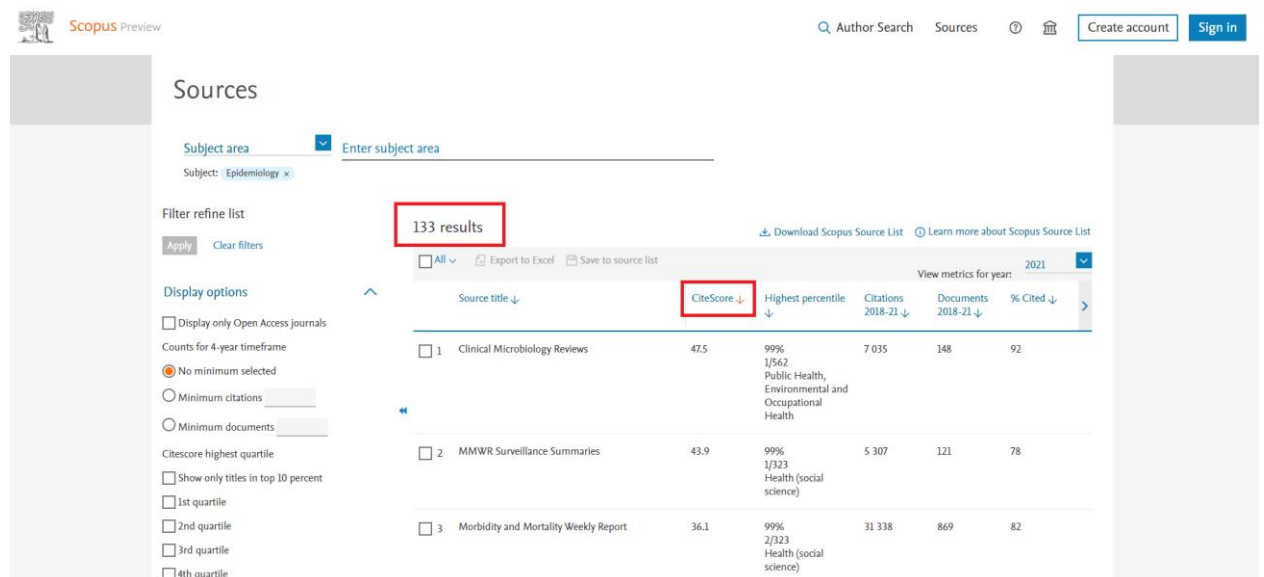
Figure 9.

Filtering by any indicator is available here. As far as I know, when publishing with the university affiliation, the university takes a notice which journal you have published in and primarily focuses on the CiteScore indicator. Therefore, I will focus in details on how it is calculated and what it is.
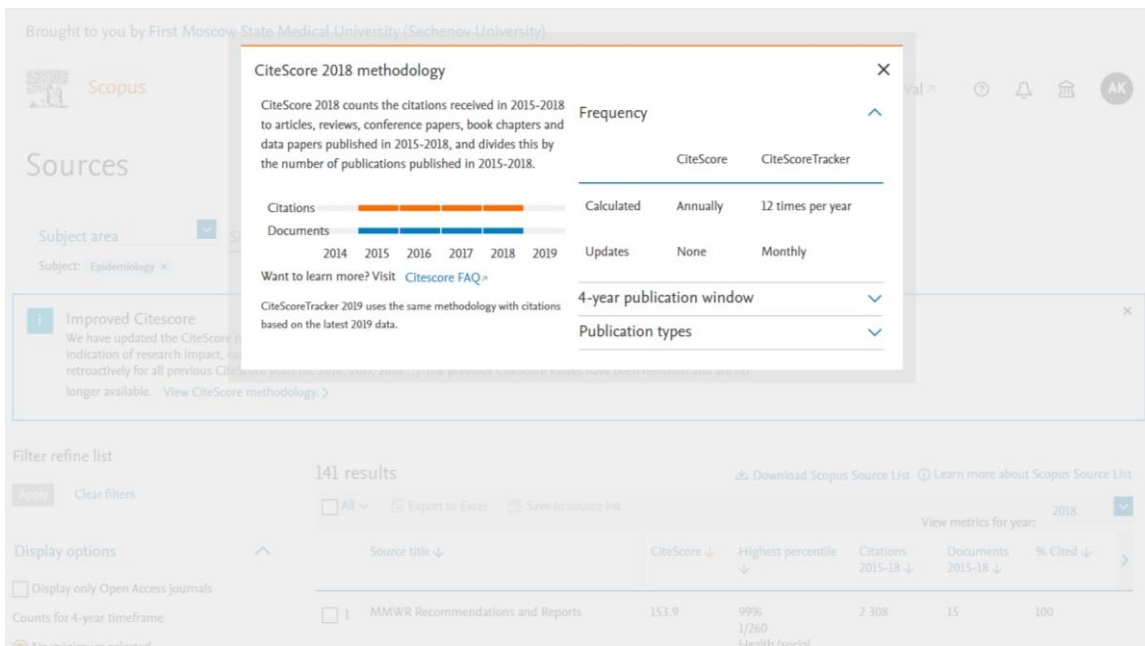
Figure 10.

CiteScore (you can see the Figure on the right) is a simple fraction (Fig. 10),

where in the denominator there is the number of publications of the journal for the last 3 years, in the numerator there is the number of citations that came from the Scopus database for these publications for 3 years. The more citations, the higher the CiteScore. This indicator is not calculated for every journal. It is not calculated in two cases. The journal has not been indexed for a long time or the journal is too new. It means that the Scopus team just does not have enough data to make such a calculation

Here we see the value of CiteScore (Fig. 11). Let us choose any journal. For example, Alzheimer's and Dementia (Fig. 12)

Numerator = Citations in 2018-21 to typically peer-reviewed publications in the source published in 2018-21
Denominator = typically peer-reviewed publications in the source published in 2018-21
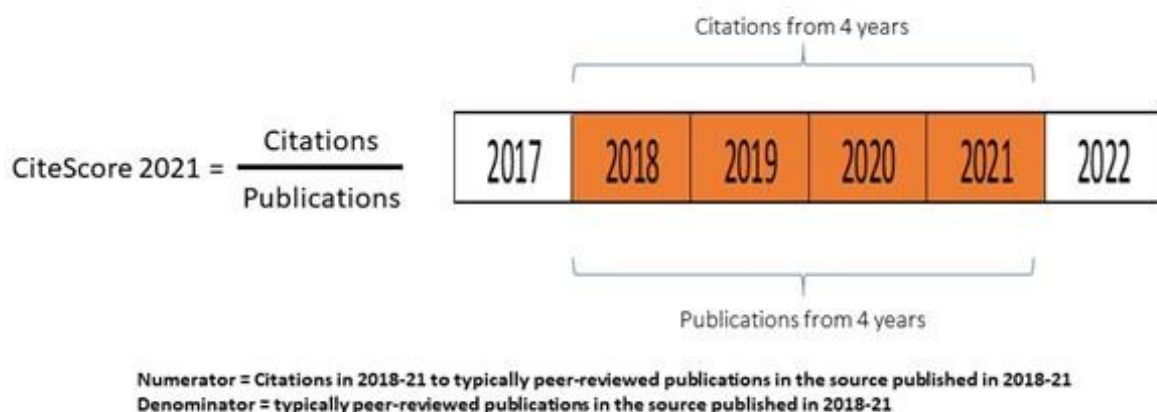
Figure 11. Value of CiteScore

66
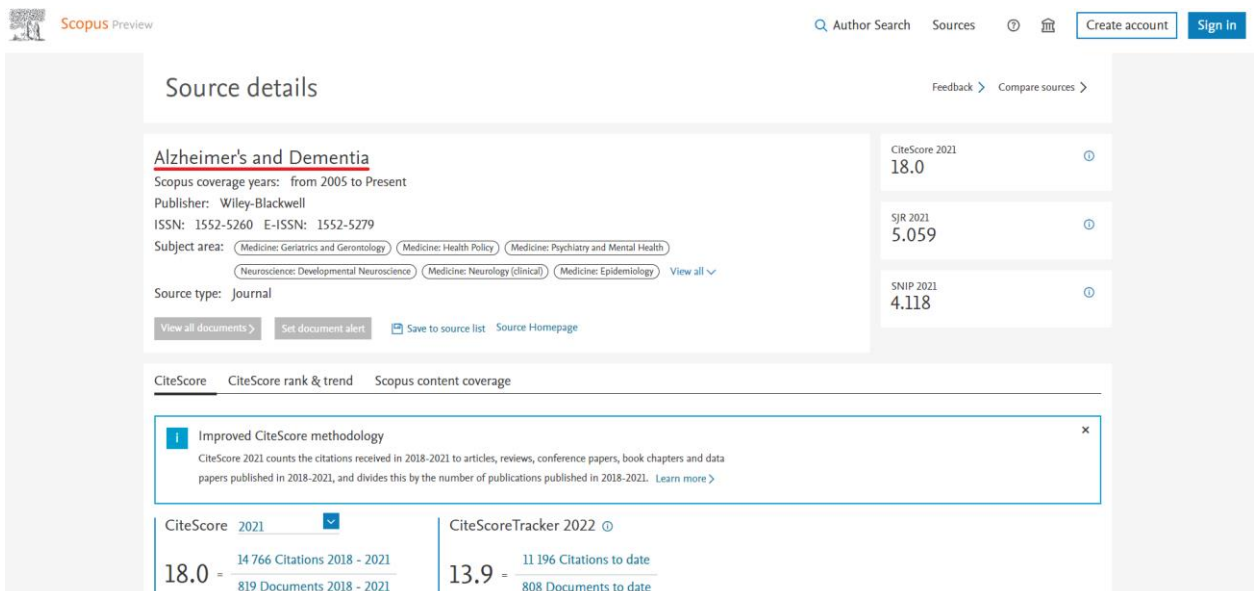
Figure 12. Source details

We see the number of citations and the number of documents (Fig. 13).

Figure 13. CiteScore

All data is provided in the webpage. You can always understand why the particular journal has those particular indicators. You may ask: "Why are we looking at the 2021 CiteScore indicator, even though we are at the end of 2022 at the moment?". It is typical of any scientometric indicator and it is associated with a very simple practical feature of indexing. Many publishers prefer to delay the transfer of content for the next year. Now, the data for 2022 are not fully present, so we are not able to calculate the indicator for the next year. Most likely, we will receive the complete data by April-May of the next year. Only then will we be able to calculate the 2022 CiteScore. However, in order to make it easier for the users to see how the journal is doing this year, there is another indicator, *CiteScoreTracker* (Fig. 14).
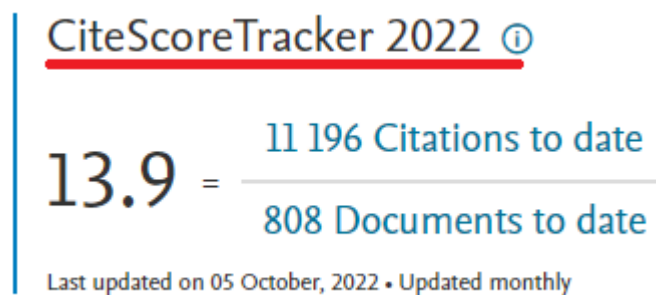
Figure 14. CiteScoreTracker

This is an approximation of next year's CiteScore values. The numerator will grow, because the denominator will not change. The number of documents for 2016-2018 years will not be added with a high probability. We see that this journal has almost gained more than 90% of citations from last year. I can assume that it will at least reach its indicators. Most likely it will be higher.

When we have the task of choosing a journal for publications, we can consider two main cases. In the one hand, we may have an idea in which journal we want to publish. On the other hand, we do not have it. The first case is also broken down into many variants. For example, we go to a particular journal. In this case, it makes sense to check whether this log is present in the database or not. There are two verification options. We can search by *Title,* and we can search by *ISSN* (Fig. 15).
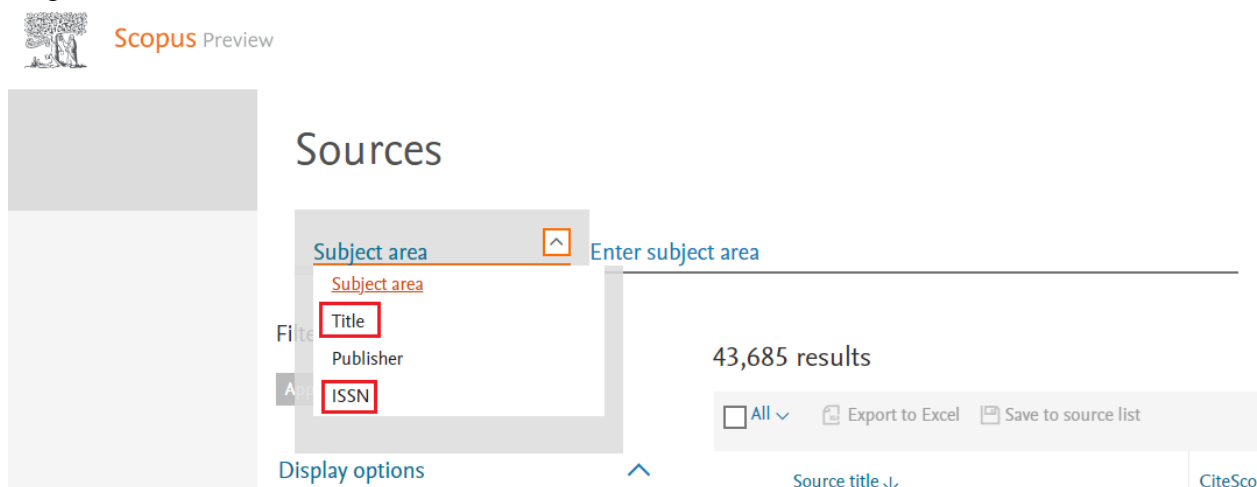
Figure 15.

I think you all know well that every journal has an ISSN. If it is not there, then it is not a journal yet. You should not try to publish there. So, just enter any value. What does it mean when we conducted an ISSN search and found nothing? It means that the journal has never been indexed in Scopus. Even if a journal says that Scopus is wrong, in fact it is not. The only very rare situation is if Scopus accepted the journal a month or two ago. Scopus informs the journal that it has been accepted into the database, but it takes a few months to create a journal card. What should you do in this case? I would wait until it does appear, to make sure that the journal has in fact been included in the Scopus database. The following situation might happen. We found a journal with a slightly worse indicator. Suppose, we were invited to publish in the journal

Revista Brasileira de Epidemiologia (Fig. 16).
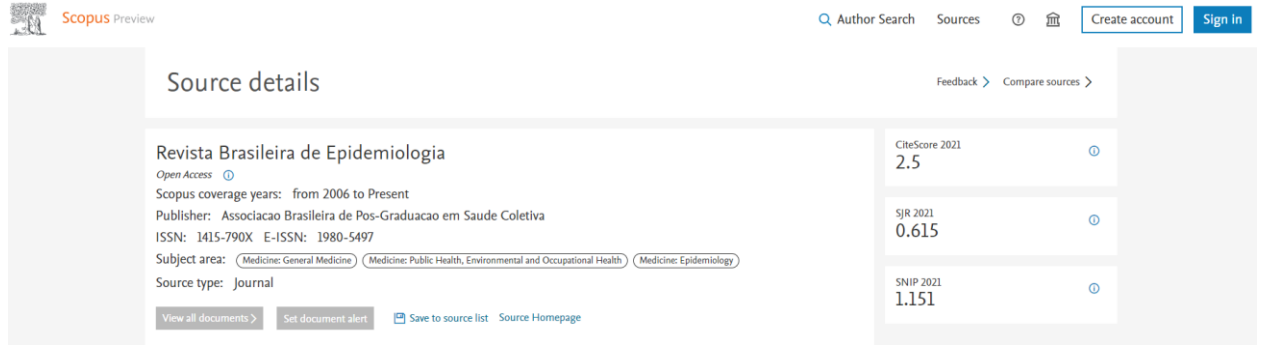
Figure 16.

We enter and look. The CiteScore is low here. In addition, the journal is publicly available (Fig. 17).
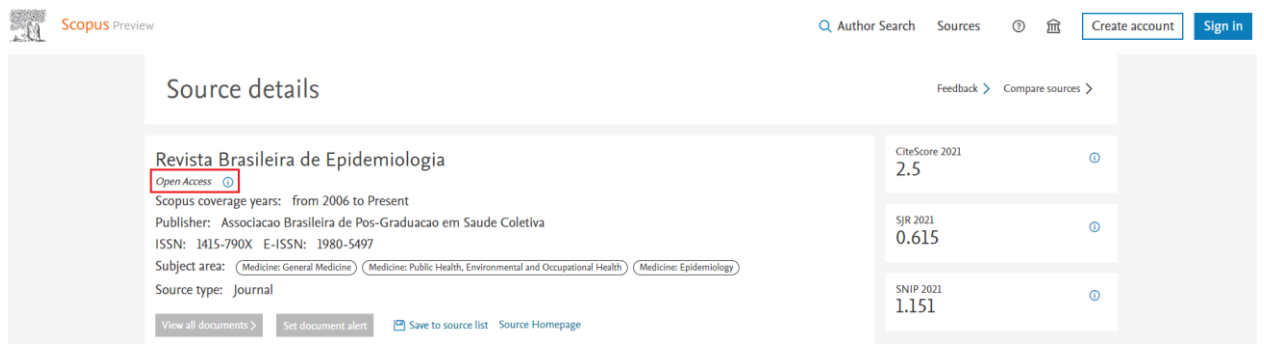
Figure 17.

The advantage is that if our article is accepted, then it will definitely appear in the public domain. Regardless of the subscription, people will see it. However, the disadvantage is that in most cases open access is the format of the journal's existence, in which the journal's activities are paid for by the author. It means that the author pays for the fact of publication after receiving positive reviews. Therefore, you can use this indicator as a beacon. This does not give you a full guarantee, but it can be used as a sign of whether I will have to pay for the publication in this journal or not. If we go back to the list, we will see that some journals have such a mark, and some journal do not have such a mark (Fig. 18).

Figure 18.

In that case you go to the website and see the cost of the publication in the public domain and go through a review. If everything is fine, then you pay the amount. If we do not see such a mark, then most likely this is a classical subscription journal, where publications are free. Maybe this is somehow specific to Epidemiology, but in general, the vast majority of journals are in subscription mode. Let us apply the filter *"Display only Open Access journals"* (Fig. 19, 20). Only 5860 are publicly available out of 43685 sources that are currently indexed by Scopus.
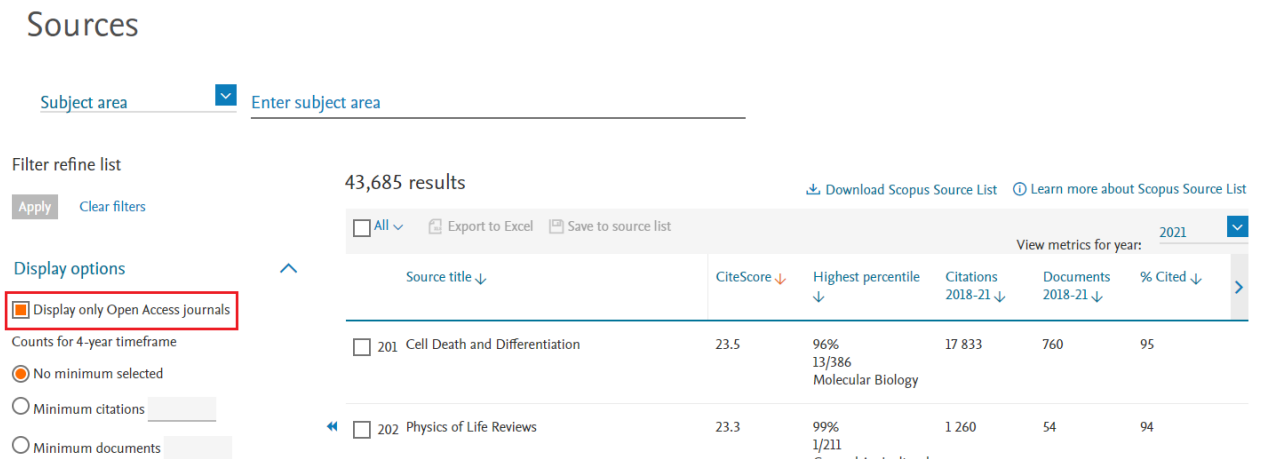
Figure 19.
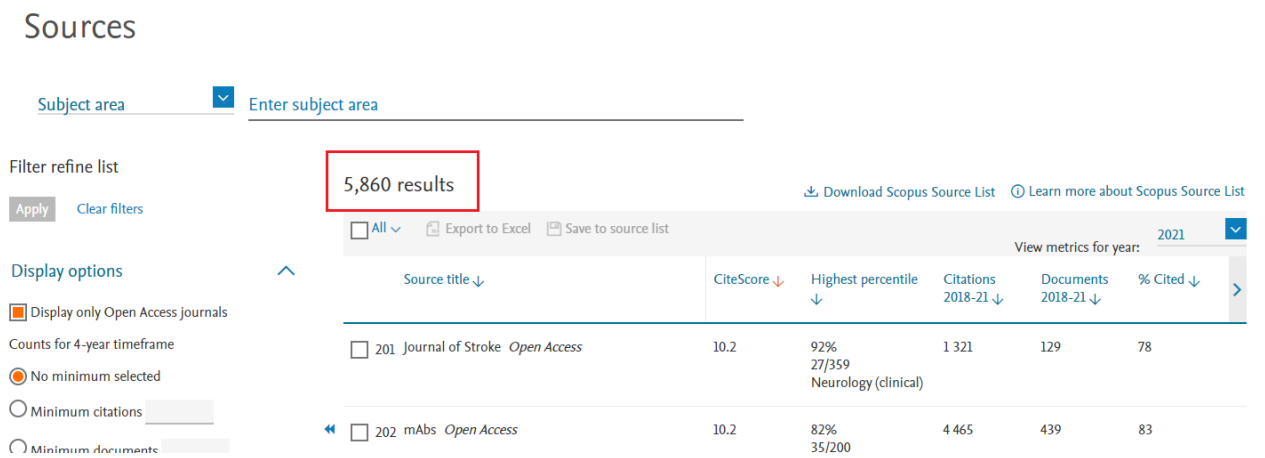
Figure 20.

However, it is still less than 25% of the entire array of logs. If we see that this journal has rather low indicators from our point of view, then there is a section *"CiteScore rank and trends"* where you can view all other journals in the same narrow subject category (Fig. 21).

Figure 21.

A journal can belong to several categories. We can choose the category that is closest to our publication. In this case, some cardiovascular therapy journals relate to cardiology and

pharmacology (Fig. 22).
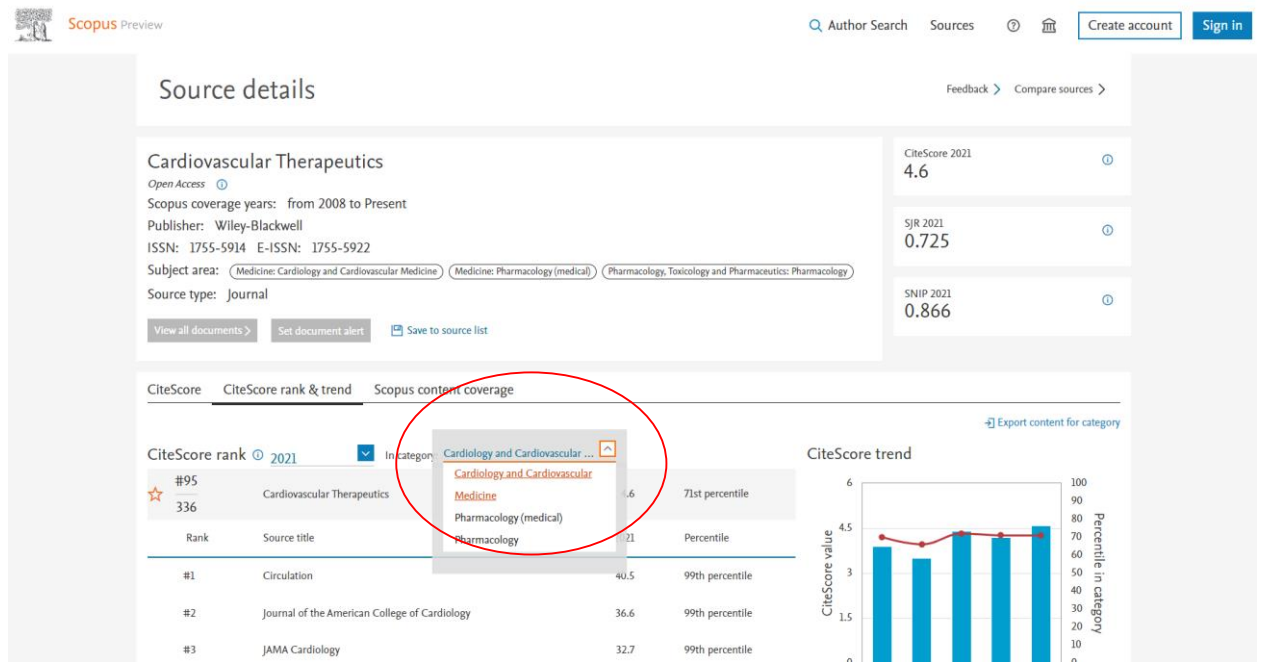
Figure 22.

Depending on which side we approach this from, we can choose the desired subject area and look at all the journals in this area. They are ordered by the CiteScore indicator here. We are considering this journal, "Cardiovascular Therapeutics", right now as an example. CiteScore is average. It is somewhere in the middle of this area. Then we can go either up or down.

What other options are there, when you analyze the list of sources? Let us look at some *Subject* **area** and choose something else. For example, *Endocrinology* (Fig. 23).

Sources

Figure 23.

Let us scroll to the end. At the end, we will see journals that do not have the calculated indicators. It is quite possible when you check a journal and see such a sign on it (Fig. 24).

Figure 24.

This sign can appear in two cases. The journal indexing has stopped for some reason. It may be the Elsevier journals. For example, the journal "Regulatory Peptides". It existed from 1980 to 2015. The last CiteScore was calculated in 2016, so there is no modern value. Scopus always shows this information if the indexing of some journal has stopped.

How does this affect you if you have published in this journal before indexing stopped? In this case, all the old content is saved. Scopus does not delete anything retrospectively. But nothing new is coming in. The reasons for deleting may be different. These may be natural causes. The journal simply stopped publishing. These may be reasons related to ethics violations on the part of the journal.

Let us go back to the list of journals and look at the journals at the end of the list of your subject area. I will show you an example. In the field of *Endocrinology*. Diabetologie Meetabolismus Endokrinologie Vyriza. 202 out of 227 (Fig. 25).

Figure 25.

If we see that the journal has a fairly low index, and it occupies one of the last places in its category, then it is one of the candidates for exclusion from the database. These may be those journals that are least quoted and least in demand by the readers. These are journals that are at the end of their subject lists. Therefore, pay attention to the ranking information. In endocrinology, this journal is the penultimate. Likely, when Scopus accepts a new journal in endocrinology, this journal will already be under attack and it will be reviewed by experts. It is quite possible that they will exclude it. This way Scopus can check any journal they have information about, its ISSN, etc. Another situation. You have not decided where you want to publish yet. You just have a scientific article and are thinking where to publish it.

Let us go back to the selection of journals when we are just writing an article. I think the journal where you want to publish will ask you for certain metadata. It will be a title, an abstract, keywords. This is exactly the data from which we can start. First, check the keywords. Suppose we are investigating "anticancer drugs". For example, I put the words or word combinations in quotation marks. For example, "gene expression" (Fig. 26).

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Article title, Abstract, Keywords ⌄

Search documents *
"anticaner drugs" and "gene expression"

+ Add search field   Add date range   Advanced document search ›   Reset   Search Q

Search History   Saved Searches

1 TITLE-ABS-KEY ("anticaner drugs" AND "gene expression")   0 results   ⌀ Set Alert ⋮ More

Your history is available during this visit, but will be deleted after you leave Scopus. Click 'More' to 'Save' important searches.

Figure 26.

It is not necessary to enter all the keywords. Only the main keywords that determine the direction of our research. Next, we need to select the correct set of default fields (Fig. 27). You will select "article title, short description, keywords" (Fig. 27). These are the blocks of the article that contain exactly scientific information about the publication. Let's do such a search (Fig. 27).

Scopus

Q Search   Sources   SciVal ↗   ⑦   ⌀   🏛   AK

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Article title, Abstract, Keywords ⌄

Search documents *

+ Add search field   Add date range   Advanced document search ›   Reset   Search Q

Search History   Saved Searches

1 TITLE-ABS-KEY ((anticancer AND drugs) AND (gene AND expression))   18,825 results   ⌀ Set Alert ⋮ More

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Article title, Abstract, Keywords   ⌄

Search documents *
"anticaner drugs" and "gene expression"

\+ Add search field   🔲 Add date range   Advanced document search ❯   Reset   **Search** Q

Search History   Saved Searches

1   🖉 TITLE-ABS-KEY ("anticaner drugs" AND "gene expression")   0 results   🔔 Set Alert ⋮ More

🕐 Your history is available during this visit, but will be deleted after you leave Scopus. Click 'More' to 'Save' important searches.

Figure 27.

This search is an important marker. In this case, I found 3282 results. What does this mean? The fact that the terms I have indicated are widely used and other researchers also use them. If I use such keywords in my article, then most likely I will have no problems with other scientists to find my publication later. Moreover, if for example you conducted a search and you do not have 3282 results here, you have just 100 results and 80 results that are written by authors from Russia, and then this is sign for you that something is wrong with your keywords. Most likely, the term is not commonly used. In this case, I recommend you to return to some better-known term. Look in the **"Keyword"** section (Fig. 45). You can expand it and see all the keywords. The area I have set is very wide. I can narrow it down to individual keywords (Fig. 28).

Figure 28.

You will see how many articles we will find at once. You can choose all of these and start from these keywords. If there are many results, then we can use them as a basis for making a list of references, conducting a literature review. In this case, we can filter them by relevance.

It means you can start with those publications that are more relevant to the subject of your research and analyze them. In this case, if you have logged in with your username and password, you can find the publications you need, mark and save them in a certain list in order to quote them in the future or upload them to Mendeley.

In general, you can save the entire search query in order to receive notifications about new results in one form or another (Fig. 29, 30, 31, 32).

Figure 29.

Figure 30.

Figure 31.

Figure 32.

How can you receive these notifications? Option 1. You log in Scopus into your personal profile, and the system can give you an update. So if you once made a request about "stem cells in rats" and did it a year ago, there were 28586 results. (Fig. 33).

Figure 33.

You can only view the results that appeared since your last request (Fig. 34).

Figure 34.

It will be 11451 articles on this topic (Fig. 35).

Figure 35.

Here a special operator appears that shows us the cut-off date. I take only those documents that appeared in Scopus after November 26, 2018 (Fig. 36).

Figure 36.

At the beginning, I said that we can physically recreate the picture in Scopus on any date. We do this with operator. Another way is easier. We can set a notification for any search query with the required frequency.

If you understand that this is the direction of your research, if you want to receive updates about it, you simply specify the name, email address, and with the necessary frequency (it can be daily, weekly, or monthly) the system will send you lists of articles with titles, abstracts, and detailed information. If you think this article is relevant, you can go to Scopus and look. This information will be in the mailbox. There is really a lot of information right now, and if you do not want to conduct a review with some frequency in a special way, then there is a high probability of missing significant publications. Therefore, such regular notifications are quite useful. If you realize that you have switched to some other topic, you can always make the old once inactive. They will stop coming. Alternatively, you can change the search query.

Let us get back to the search query. I would like to remind you that initially we indicated the keywords of our publication and thought about where we could publish it. Let us select only publications of the last 6-7 years in the search focusing on these keywords (Fig. 39).

Figure 39.

 We need those journals that are currently published in this area. We will choose only journals as a source, because there are also books on this theme and conference materials.

A little less will remain. 16 results are those results that contain these keywords and are published from 2015 to 2020 in the journals (Fig. 40).
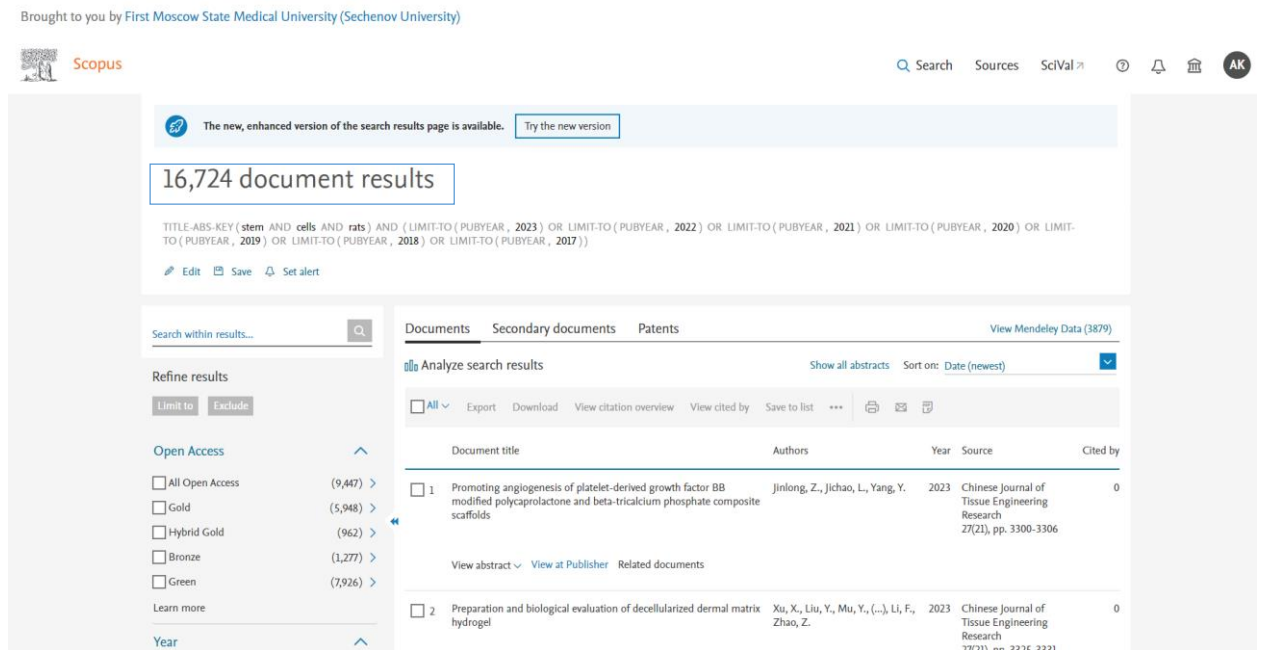
Figure 40.

Let us analyze these search results further. Filters by organizations, countries, years, just show it in a graphical form. Information becomes more obvious. We see the dynamics of the publication. Here, over the past two years, the dynamics has been decreasing. This is normal, because these are 2019-2020 years (Fig. 41).
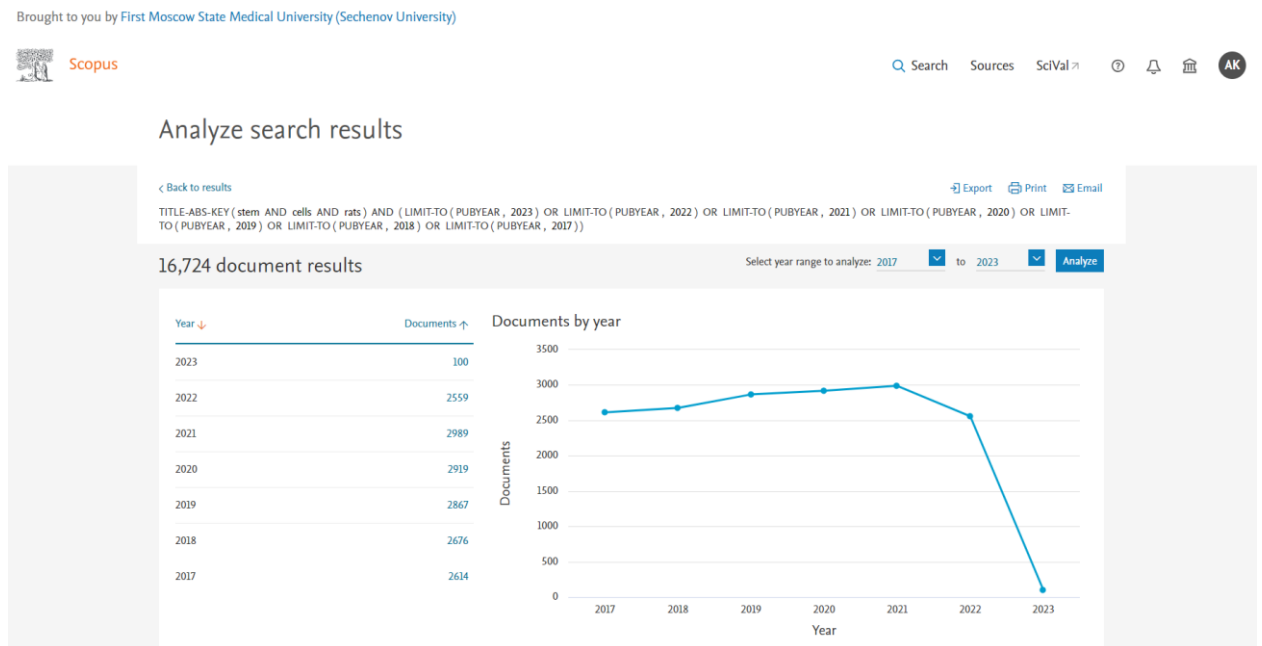
Figure 41.

The years that have not ended. Principally, there is no rapid growth in this subject area. Therefore, it is difficult to expect a significant breakthrough here.

In this case, we are interested in journals that are published in this area. These are the journals in which the articles with the keywords of interest appear most often (Fig. 42).
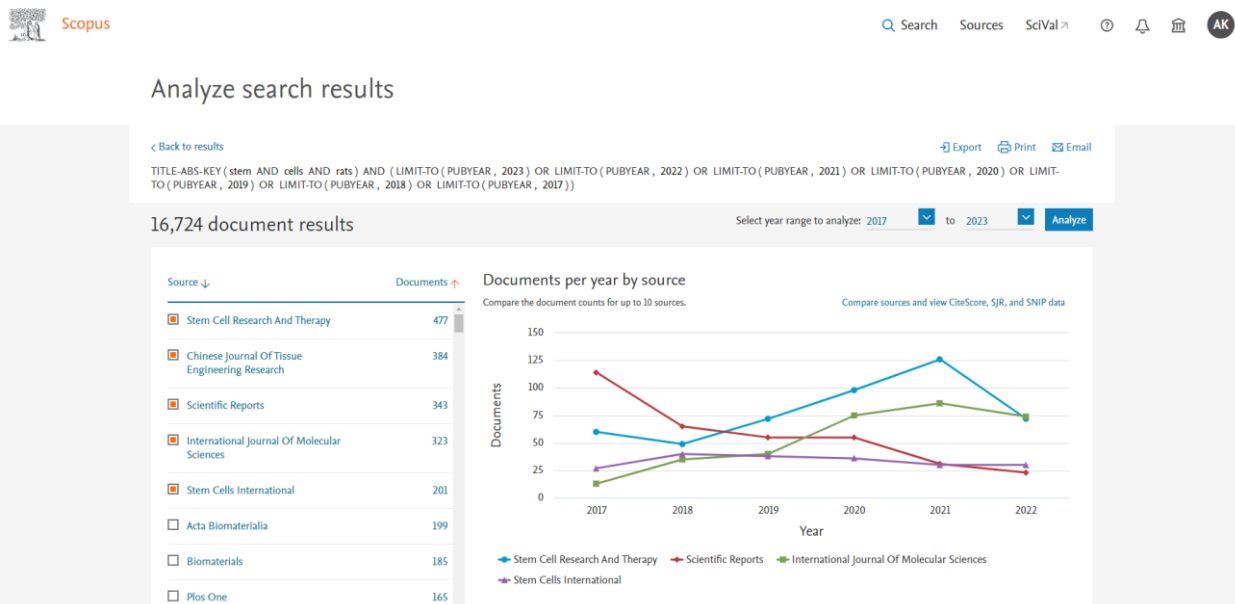
Figure 42.

A situation where you can not imagine an array of journals that focused on your scientific problem is one of the good approaches. You see the right journals and see how often articles on this topic are published in them. Pointing to the graph of each journal you immediately see its indicators by CiteScore and by other metrics. I can choose any journal we are interested in and see the data. You can see if is it indexed or not.

If we want to compare all these journals by scientometric indicators, it is also possible. At the top, there is a link **"compare sources and view data on CiteScore, SJR and SNIP"** (Fig. 43).
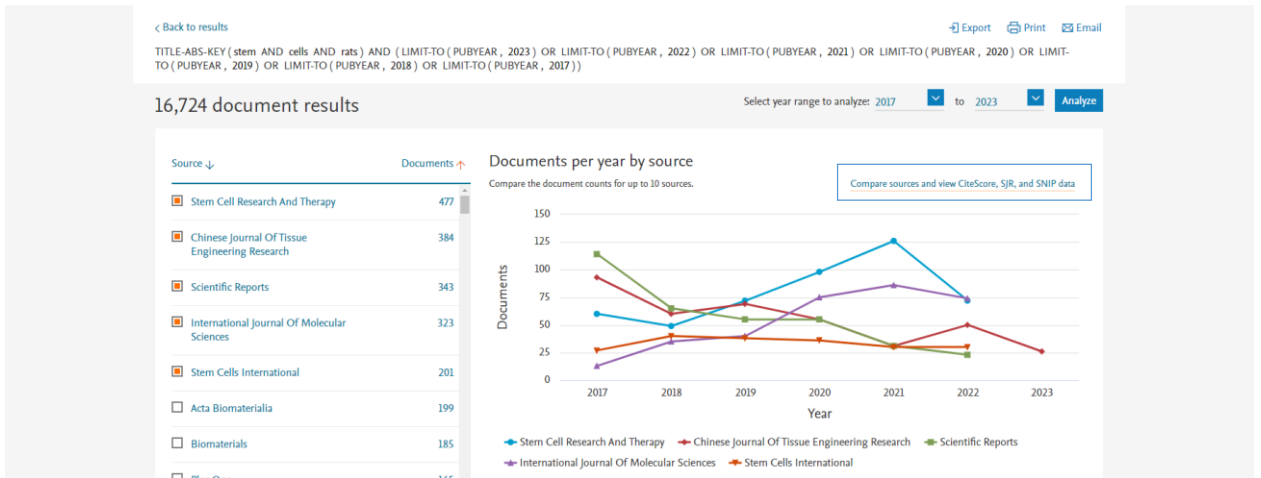
Figure 43.

We can click on it. We will see publications' dynamics and their indicators for all journals (Fig. 44).
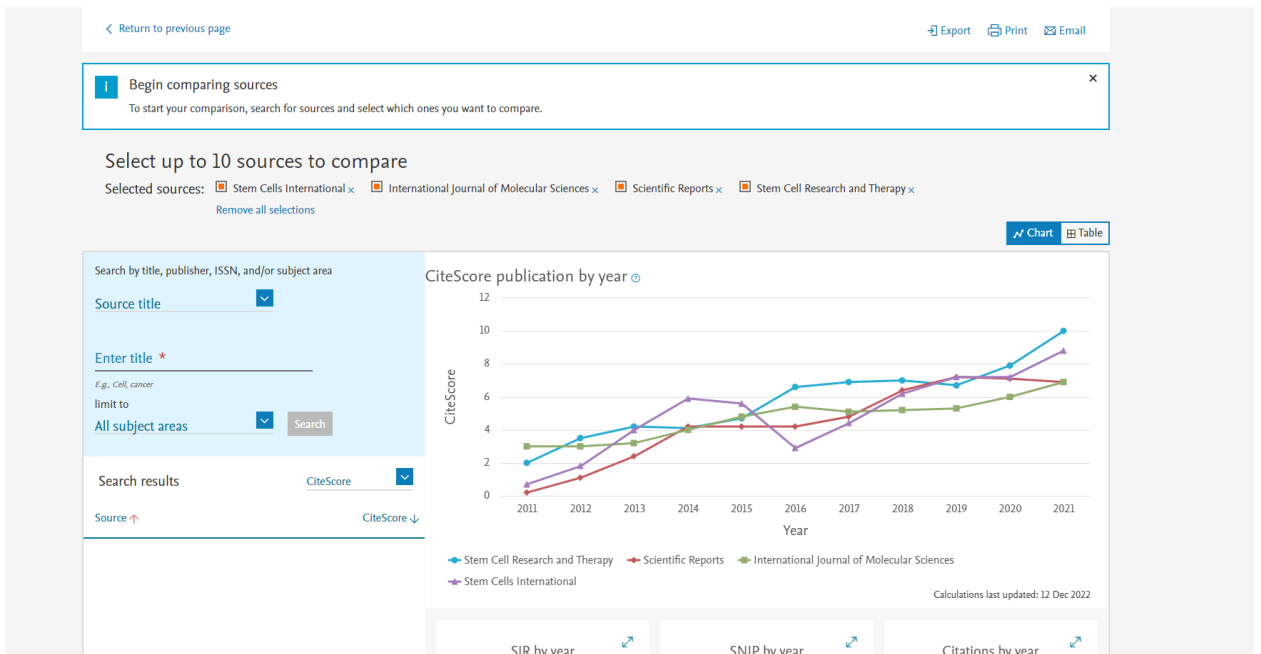
Figure 44.

We can combine Approach 1 and Approach 2 and add your journal here for comparison.

In fact, we can look not only at CiteScore, we can look at other different interesting indicators. For example, the percentage of uncited documents in the journal. Let us take this situation. As part of a large international research team, you have done an important research in the field of

anticancer drugs. It does not happen that there are several journals at once, but we will assume that your article is ready to be accepted by any of these journals. Where do you think the probability of quoting a separate article is higher? That the article will be cited more than zero times. The answer is in Science Journal and Nature Journal. It would seem that this is an obvious answer, because the indicators of Science Journal and Nature Journal are at least three times higher than any other journal on our list. But let us see if that is the case. Let us take such an indicator as **"The percentage of uncited documents by year",** and we will see an interesting Figure (Fig. 45).
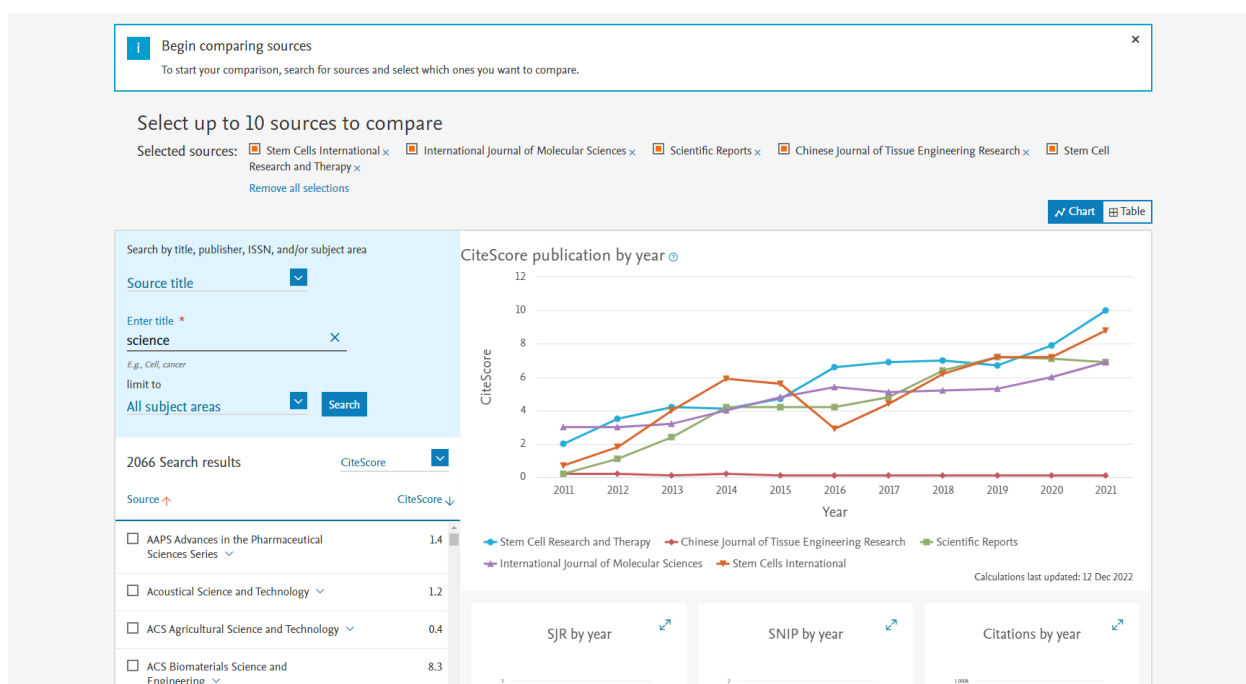
Figure 45.

What does this graph say? It shows the proportion of articles published in the corresponding year that have not received a single citation to date. In almost all highly specialized journals that we have reviewed, this indicator ranges from 1% to 4%. 96-98% have been cited at least once (Fig.46).
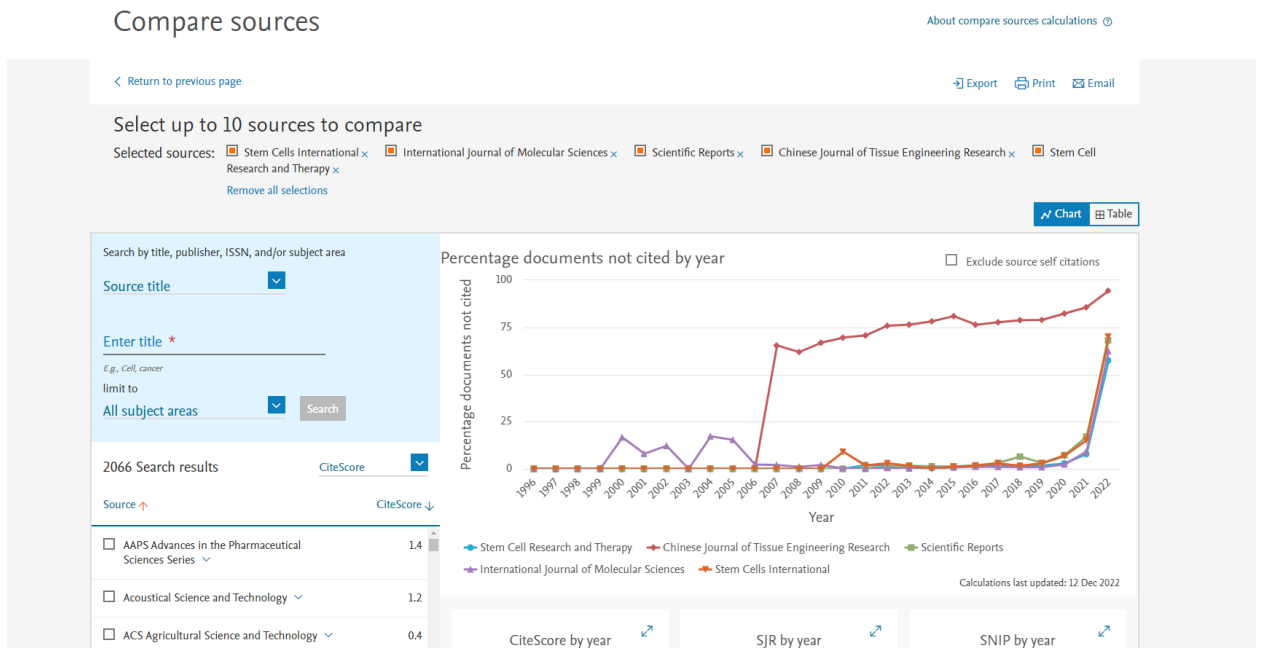
Figure 46.

If we look at the Stem Cells International, up to 9% of articles are never cited, regardless of the year of publication (Fig. 47).
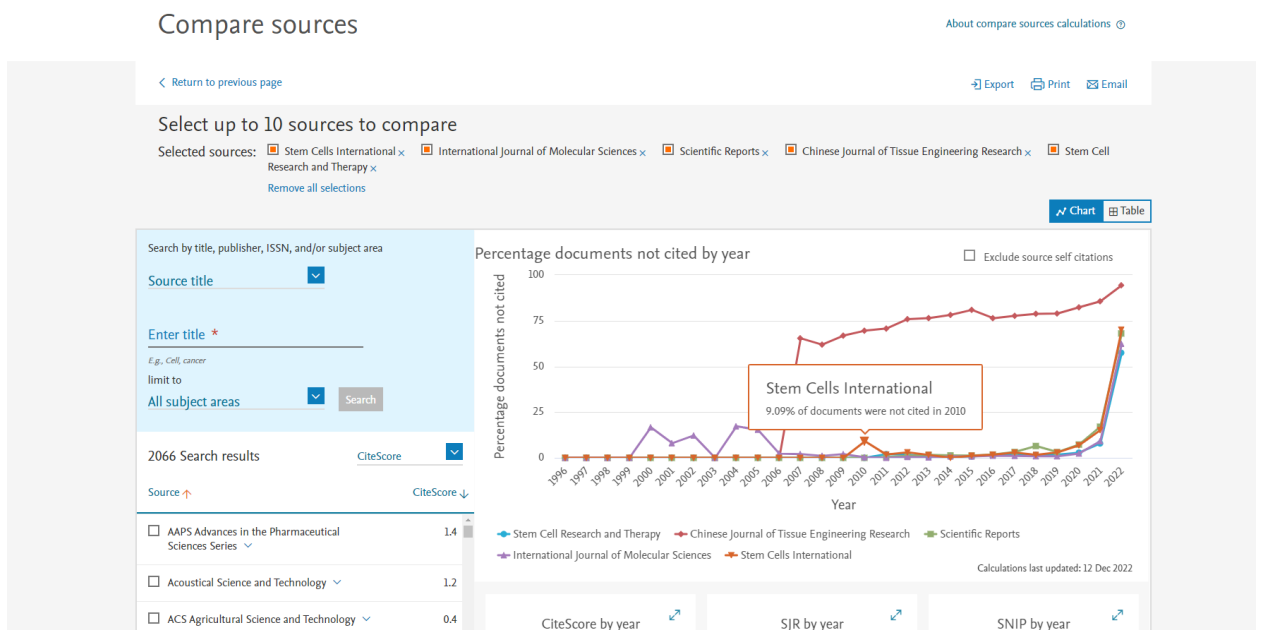
Figure 47.

I would like to emphasize that the high value of *CiteScore* does not guarantee anything to you. The situation may be different. When you choose a journal, you are supposed to view the journals from different angles. A very high rate of *CiteScore* can be caused by a large number of reviews in the journal. Reviews are traditionally cited higher than standard research articles. If you write an ordinary article and submit it to a journal where there are 90% of the reviews, I do

not think this is the right strategy. Therefore, it makes sense to look at the journal from different perspectives.

What else distinguishes Scopus from other databases? Let me go back to the description of the database and show you the Figure I started with (Fig. 48).
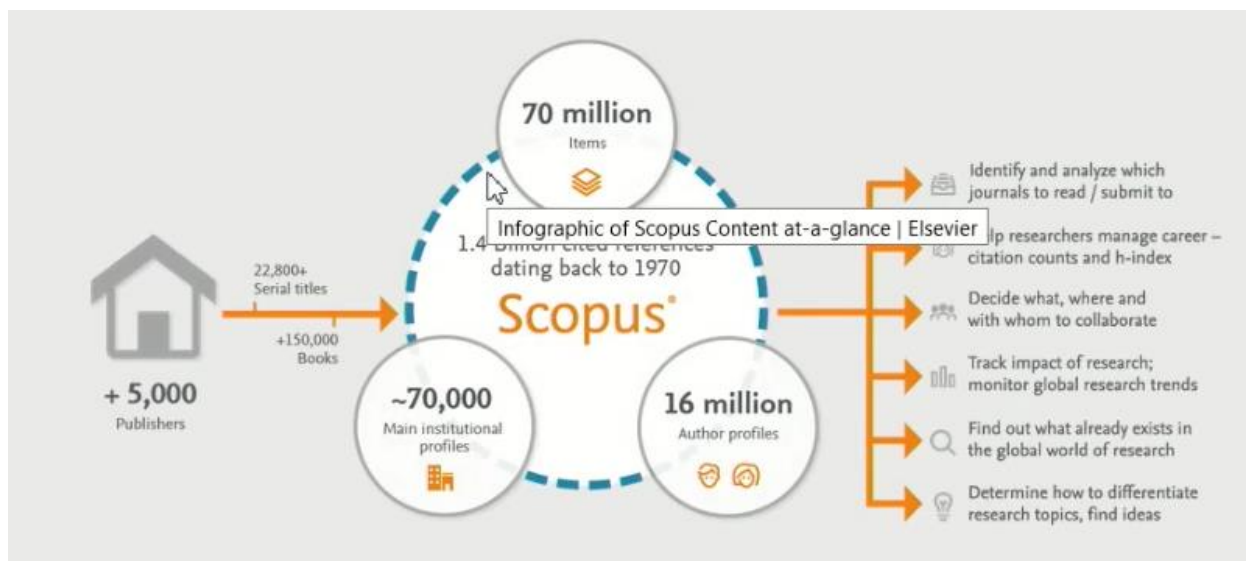
Figure 48.

What is the importance of this Figure? The specific feature of the Scopus database is that it contains two profiles, namely: the *author profile* and the *organization profile*. When Scopus receives an article from one of the publishers, the team carefully considers the metadata. Imagine, there are several authors listed there. The Scopus team checks whether they already have the profile or profiles of the authors. If they find a profile with a high degree of coincidence, then the article is linked to this profile. If they do not find a profile with a sufficient degree of match, then a new profile is created. Thus, all articles are linked to the author's profile. There are no articles that are not considered. However, there may be a situation when several profiles are created for one author. The system is set up in such a way that when Scopus needs to weigh two possible negative outcomes, they would rather make two accounts for the same person than combine different ones. When a person sees that he/she does not have enough articles, they immediately give their feedback and Scopus immediately fixes everything. I will focus the feedback now.

How do you find where all these profiles are located? Let us go back to the **Search** page. You can see that now we are on the *"documents"* tab. However, there are separate bookmarks

"authors" and *"organizations"* (Fig. 49).

Figure 49.

These bookmarks are provided specifically for profile search. It will not be a search for documents, it will be a search for combined profiles. Here we can enter the author's surname and first name in English (compulsory) and search for this information. Recently I watched a good interview with our astrophysicist Batygin. Suppose, I want to see who Batygin is? I just need to type his name and click *search*. The system will not pick up a document for us; it will show us a profile (Fig. 50).

Figure 50. Lecturer gave examples, using the Russian version in a specific period of time; if desired, the reader can find the English version of the discussed pages with up-to-date data

The system quite easily distinguishes one namesake from another, since in addition to the first and last name, there is information about the country, city, organization and subject area. Of course, coincidences also occur, but in most cases, this is a fairly convenient way of working. Then we can go to the profile and see all the detailed information about the scientist. We see a

complete list of all documents, scientometric indicators, the total number of documents, the total number of citations, the Hirsch index with a graph (Fig. 51).

Figure 51.

Do you understand what the Hirsch index is and what it means? In this case (Hirsch index =26), it says that Konstantin has at least 26 articles cited, each of which has been cited 26 or more times, while all other articles have been cited fewer times. The graph shows this quite clearly. Scopus ranks all articles from the most cited to the least cited and looks at the moment when the serial number ceases to exceed the number of citations. For the 26th article, we have more citations than the serial number; and for the next article already less. 27th article is cited fewer times, so the Hirsch index = 26 (Fig. 52).
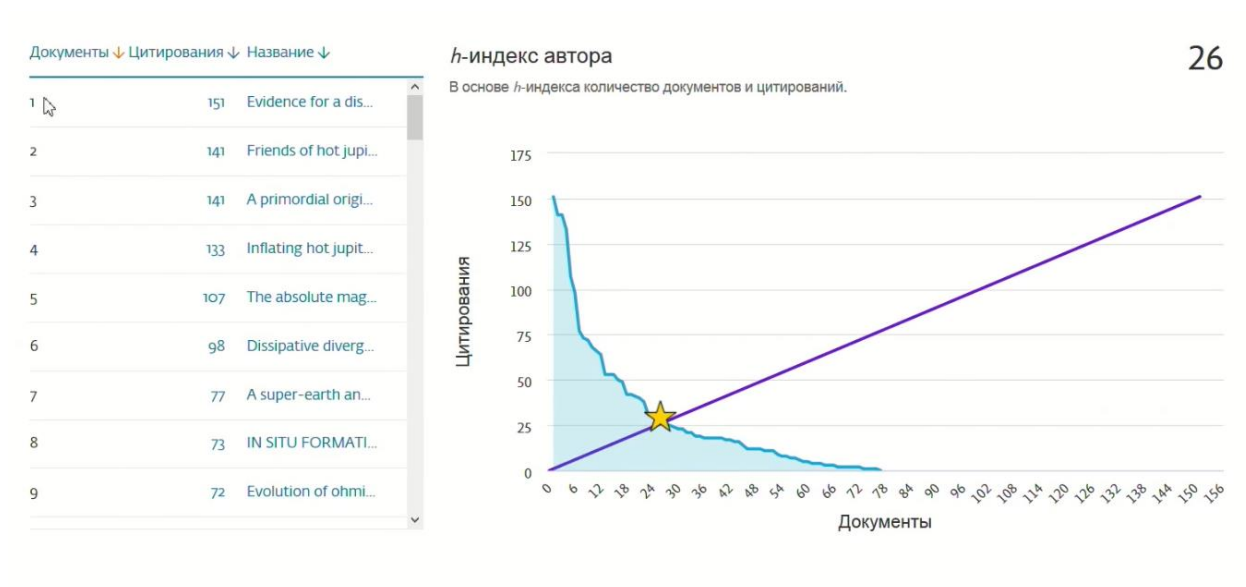
Figure 52. Lecturer gave examples, using the Russian version in a specific period of time; if desired, the reader can find the English version of the discussed pages with up-to-date data

If this article is quoted one more time, then Konstantin's Hirsch index will grow by one.

Now let us think what Konstantin can do seeing this profile. You can do the same with yours. If you have at least one article, then your profile also exists. You can set up notifications for yourself when new citations arrive. Further, if you have full namesakes or your names are written differently by different journals, then it makes sense to link your profile to the ORCID profile (Fig. 53).

Figure 53. Lecturer gave examples, using the Russian version in a specific period of time; if desired, the reader can find the English version of the discussed pages with up-to-date data

If you do not know, ORCID is an open system for identifying authors. You get a unique number after registering there. It is free. It is an international system to avoid confusion with namesakes and authors. You link this unique number to your profile in Scopus. What are the advantages? Firstly, if you specify your ORCID number, then your future article is almost guaranteed to be linked to the correct profile in Scopus and does not fall off even if there are errors in the surname spelling. Secondly, you get an automatically updated scientific resume in the public domain. ORCID is an open system, there will be a list of your articles in the open form. As soon as a new article is indexed in Scopus after you made a link, it automatically appears in ORCID and you always have a ready, updated profile. If you want to apply for an internship, you just give a link to this ORCID and everything works. What should I do if the profile data is incorrect? Suppose that Konstantin logs in and sees that some articles are missing or there is some extra one. There is a link to *"edit the author's profile"* (Fig. 54).

Figure 54.

The author's profile can be edited either by the author or by someone for him, if for some reason it is difficult for the author to do this. What we are going to do if we want to change something here? We will request changes. They would be processed manually by a team person, and if he/she thinks that some incorrect changes are proposed, it will not be made. The situation that some attacker can ruin your profile is not possible.

I will show you the first steps to make before sending. Of course, we are not going to send it. We can choose the *"spelling option"*. If a person has several spelling options for his first name and second name, you can choose one of them. It will be displayed on top. If this is not your profile, then it is advisable to indicate that you are editing another person's profile.

Then we see the full list of publications that are now linked to this profile (Fig. 55).

Figure 55.

If any of them are superfluous, we can uncheck the box. This publication will no longer be displayed in this profile. We will not delete it from the database completely. A new profile will be created for that publication. If some documents are missing, then we can simply search and link the desired publication to this profile (Fig. 56, 57, 58, 59).

Author details

Documents

Preprints

Awarded grants

Architectures of Compact Super-Earth Systems Shaped by Instabilities

✕ Remove from profile

Batygin, K., Goldberg, M.

Astronomical Journal 163(5)

2022

TESS-Keck Survey. IX. Masses of Three Sub-Neptunes Orbiting HD 191939 and the Discovery of a Warm Jovian plus a Distant Substellar Companion

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Lubin, J., Van Zandt, J., Holcomb, R., ...Winn, J.N., Gary, K.

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Astronomy and Astrophysics 658

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Astronomy and Astrophysics 658

2022

‹ Previous   1 2 3 4 5 … 12   Next ›

Display 10 results ⌄

ⓘ Are any documents missing ? Search for missing documents on Scopus

64 Preprints   ⌄

4 Awarded grants   ⌄

Figure 56.

Author details

Documents

Preprints

Awarded grants

Architectures of Compact Super-Earth Systems Shaped by Instabilities

✕ Remove from profile

Batygin, K., Goldberg, M.

Astronomical Journal 163(5)

2022

TESS-Keck Survey. IX. Masses of Three Sub-Neptunes Orbiting HD 191939 and the Discovery of a Warm Jovian plus a Distant Substellar Companion

✕ Remove from profile

Lubin, J., Van Zandt, J., Holcomb, R., ...Winn, J.N., Gary, K.

Astronomical Journal 163(2)

2022

Search for a missing document   ✕

Please be aware that some documents might not be in Scopus at the moment and therefore will not be shown.

Search within All Fields ⌄	Search documents * planet

Cancel   **Search**

‹ Previous   1 2 3 4 5 … 12   Next ›

Display 10 results ⌄

ⓘ Are any documents missing ? Search for missing documents on Scopus

64 Preprints   ⌄

4 Awarded grants   ⌄

Figure 57.

Figure 58.

Figure 59.

If our last name is not among the authors, the system will ask us to attach a PDF where our last name is visible. For cases when the authors have several affiliations, which means they work for several institutions, this is normal. Scopus processes this information correctly, but it does not always correctly indicate the organization that is a priority for you. If you work at Sechenov University and, let us say, at one of the institutes of the Academy of Sciences, the Institute of the Academy of Sciences may turn out to go first in the profile. You can change it here. After that, you click "*confirm and send*"**.** The application is sent to the Scopus technical specialist. You

receive a unique number by email. By this unique number, you can track the status of this application. According to my experience, applications for a simple correction of the author's profile are carried out in about 5-7 days.

Look at figure 60. What is it? Scopus has an analytical tool called SciVal (Fig. 60).
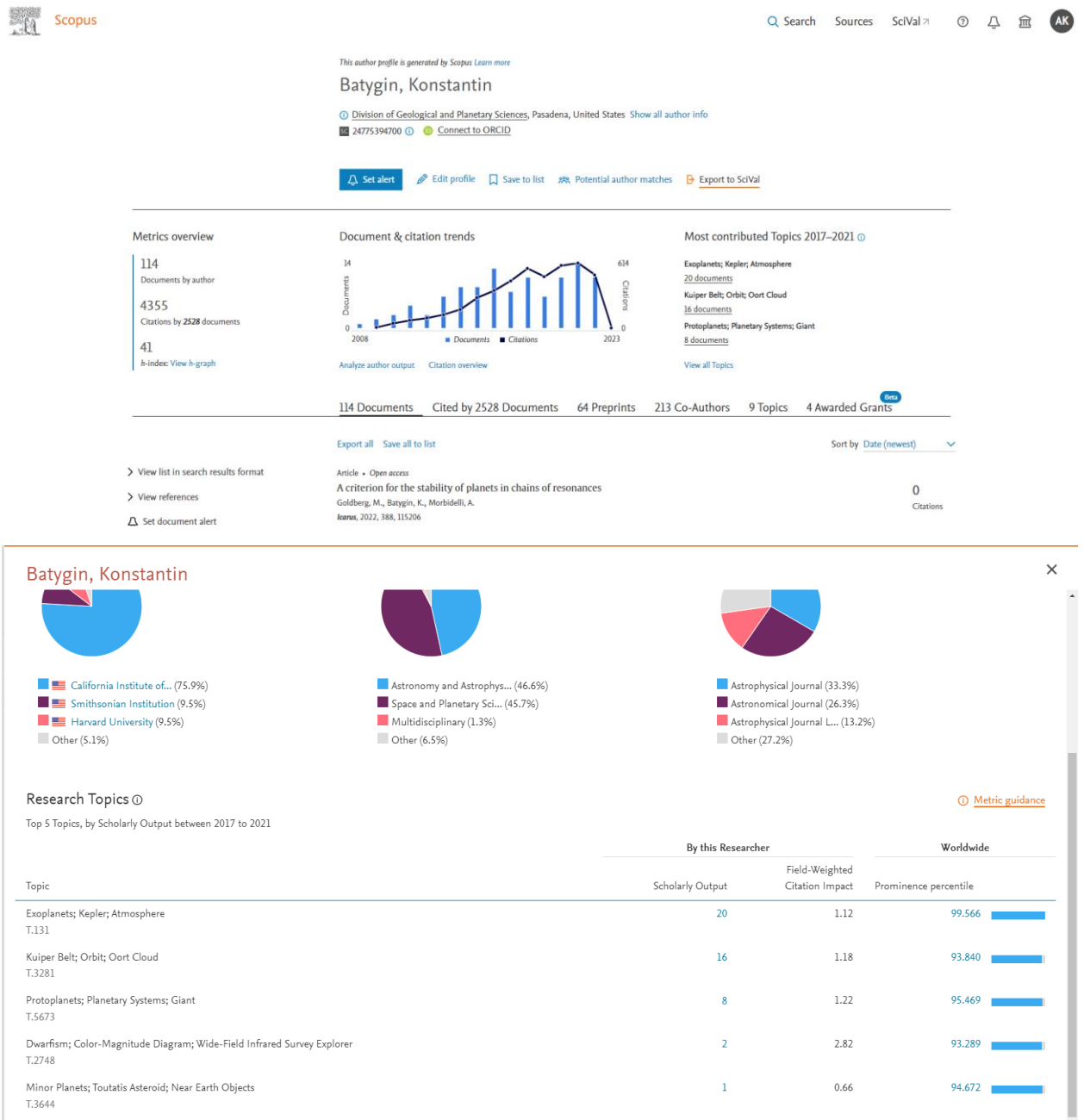
Figure 60.

This is an add-on over Scopus, in which it has implemented a project on clustering science. Scopus has broken the whole science into about 100,000 scientific topics. Each scientific topic is a certain scientific problem, which is being studied by several research teams in the world. There are 50-1500 articles in a scientific topic and the scientists who deal with this problem are quite closely related. They quote each other's works; they refer to more or less similar literature. The principle of clustering these topics is based on citation. If we take all the articles and restore the links between them and the links to their literature, we will get a connected graph. The connectedness will be different everywhere, and if we cut along the lines where the connectedness is less, then we will get 100,000 scraps of topic, and each article will be assigned to one topic. Thus, the articles of this author are also attributed. We see that most of his publications relate to the antigen network (Fig. 61).

Figure 61. Lecturer gave examples, using the Russian version in a specific period of time; if desired, the reader can find the English version of the discussed pages with up-to-date data

If you have publications indexed in the database, then this binding is done for you too. We can take any publication in Scopus. For example, we can take Kogan's 2018 publication. In addition to the standard information, affiliation, description, we have the section called *"the importance of the topic of SciVal"*, where we see this information (Fig. 62).
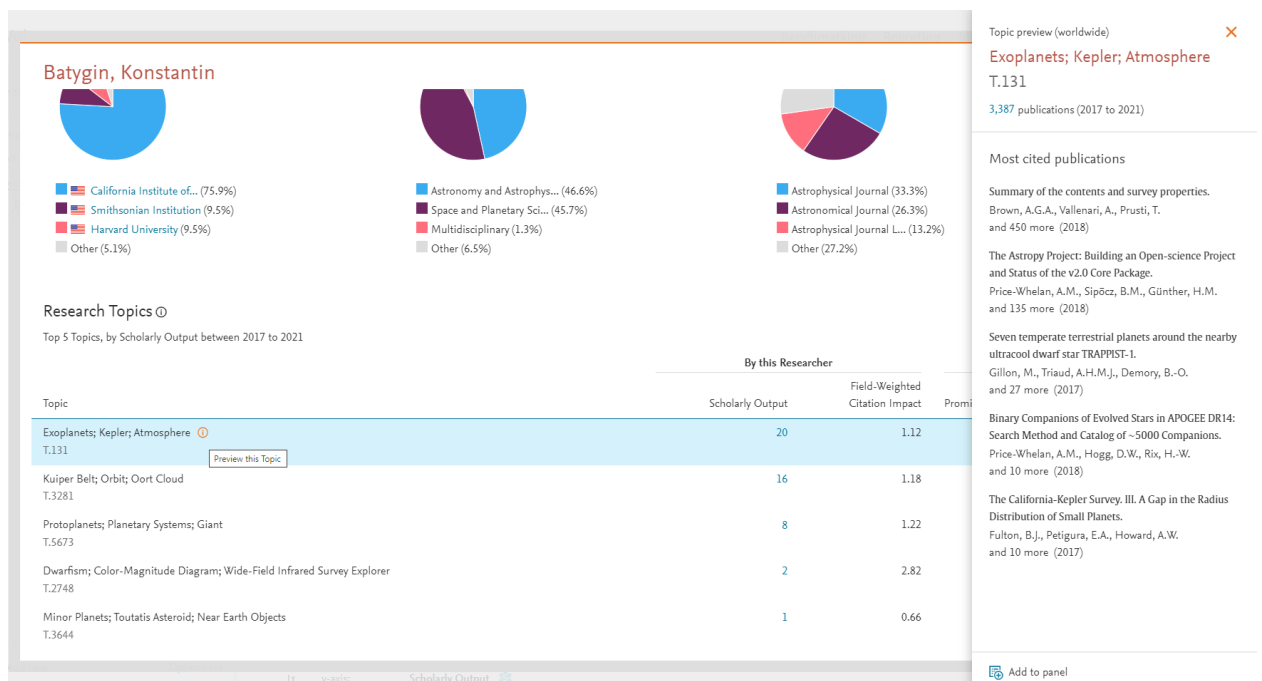
Figure 63.

We see the main scientific problem, which is being investigated there on the basis of the allocation of keywords. We see key documents for this topic, authors, and so on (Fig. 64).
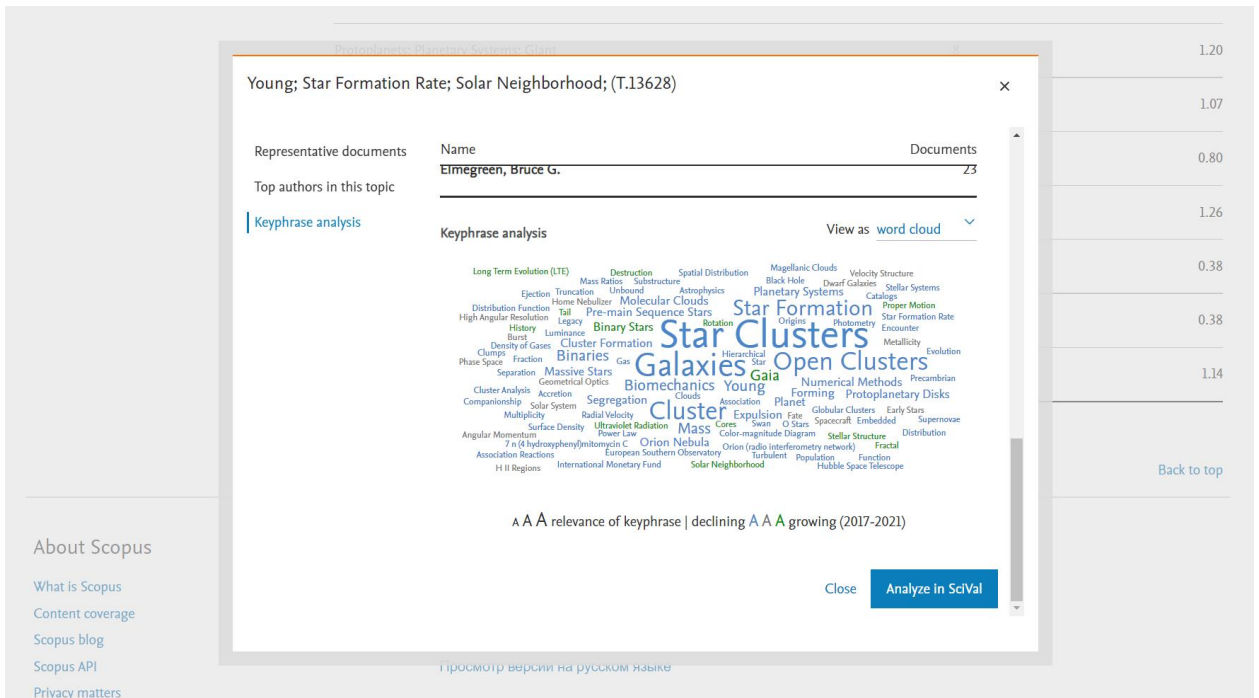
Figure 64.

This indicator is the *"percentile of importance"* (importance is not the right word, rather it shows the relevance of how much this topic is in demand by other researchers in the world) (Fig. 65).
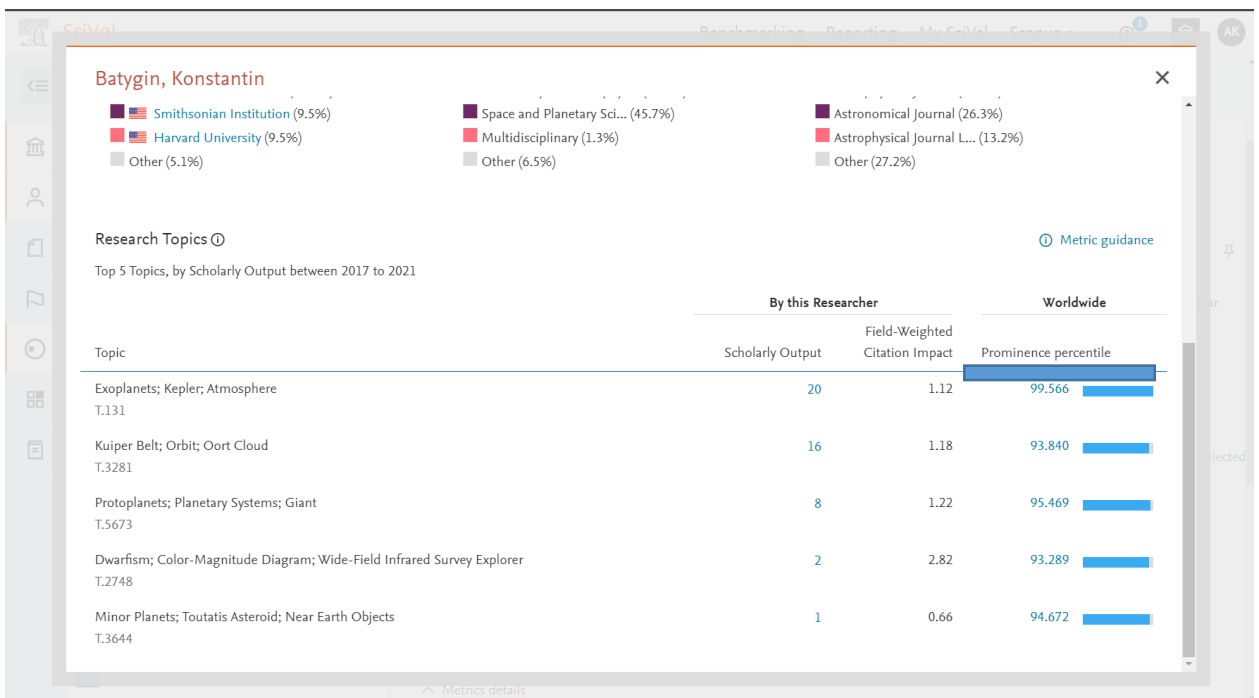
Figure 65.

That is, the higher it is, the closer it is to 100, the more relevant the topic is and the more attention not only from the researchers, but also from funding organizations to this research. Therefore, when you publish here, you can get the feedback on how much your area is now at

the forefront of the world. We have discussed the search for individual documents, the search for authors and the search for organizations with you. There is still **"advanced search"** left (Fig. 66).

Figure 66.

This is the same document search, but it gives us more opportunities to access specific fields. At the beginning, it may seem complicated, but in fact there are detailed hints for all fields. We can find out which chemical compounds are mentioned in the publication. There are special requests that relate to chemical names. We can also get information about the financing of an article (Fig. 67).

Figure 67.

In which case is it necessary? For example, when we want to understand whether a particular foundation supports the research in this area. Let us say you and me are working in the field of anticancer drugs, and we want to see if FFI supports such applications or not. We can choose the field, the abbreviation of the sponsor, FUND-ACR and, for example, write RFBR and see if there are publications that used FFI on this topic (Fig. 68).

Figure 68.

There is only one 22 (Fig. 69).

Figure 69.

That is, we can conclude that this is not a priority direction for FFI and, probably it is better for us to go to another fund with our research. There are many other fields you can select and link with standard logical operators.

I understand that for the first time, the amount of information may be excessive, so I can offer you to go to the Elsevier website as a reinforcement of the material. We have detailed information about each of the products we are talking about. We talked about Scopus today. There is detailed information about the database description, there is a guide for authors, all those lists of journals that we talked about. They are presented on the website in the Excel format. Scopus has a list of Russian journals. There are already more than 530 of them in the database. Therefore, you can check it if you focus specifically on publications in a Russian journal. You can view detailed information about other products. We Have also touched a little bit on SciVal. You can see additional features. This is an excellent analytical tool.

Scientometrics: Focus on the Mendeley Reference Manager
After Andrey Loktev, analytical solutions consultant for Elsevier and Mendeley publishers

Mendeley is one of the products that is created and developed by the Elsevier academic publishing company. *Mendeley Reference Manager* is a free web and desktop reference management application. It helps you simplify your reference management workflow so you can focus on achieving your goals. With *Mendeley Reference Manager* you can: store, organize and search all your references from just one library. Mendeley is not only a reference manager. It is a whole platform of different solutions available for free to an individual researcher. We will discuss how Mendeley differs or does not differ in certain functions from other reference managers and what opportunities it provides.

To make it easier for you to get acquainted with this reference manager we will discuss all the steps you have to make on your computer as an efficient user. In order to understand what it is, please visit *Mendeley.com*. Let us start with the part of the solution that appeared first, namely, the bibliography storage system.

This is a well-developed set of solutions that are designed to make it easier for any person writing an article to use some data, to do data storage, organization and subsequent citations. In this regard, Mendeley is a fairly standard solution. Work with scientific literature begins with ordering in most cases, with what we already have, what we have already saved to our personal computer. We need to install a program in order to organize it. To do this, it is enough to go to the Mendeley website and use the download link to download this program (Fig. 1).
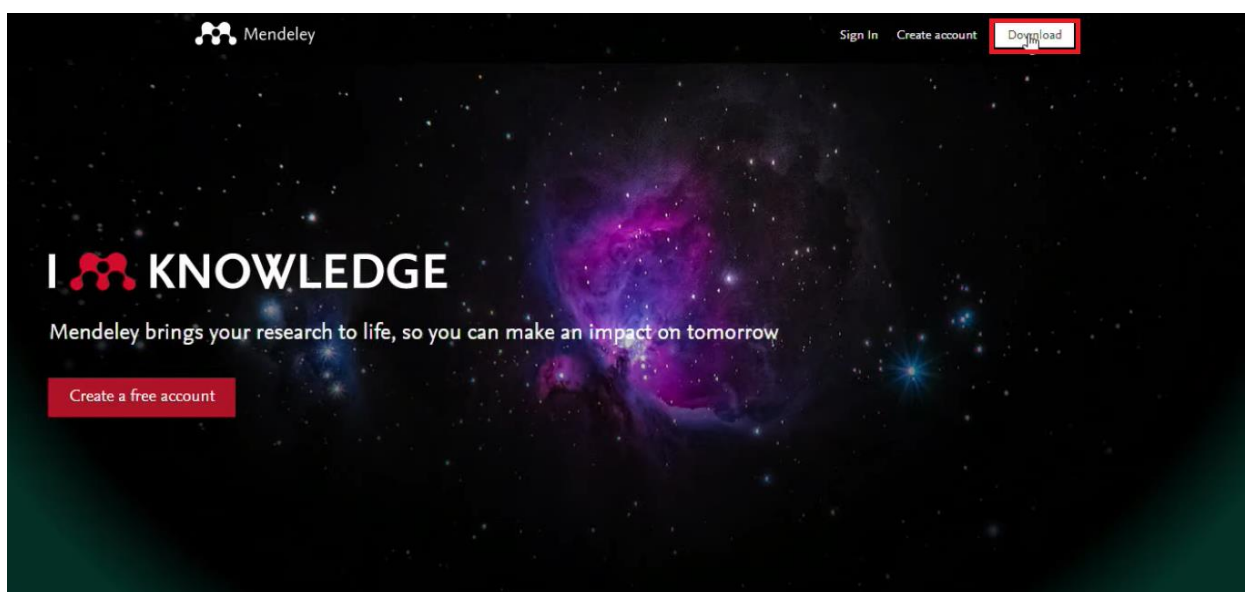
Figure 1.

Figure 2 shows the version for Windows, there are also versions for MAC, for Linux, depending on which operating system your computer is running on. After installation, a window appears where you need to log in.

Figure 2.

You can use the same account for authorization that you already have for using Mendeley, Scopus, ScienceDirect, Reaxys or any of the other Elsevier applications. Otherwise, you can always click the Register button at the bottom of the screen and register.

We will return to this screen later, but for now let us take a look at the application itself. I am using my account as an example and we see my personal library on the screen that appeared after I logged in with my username and password (Fig. 3).
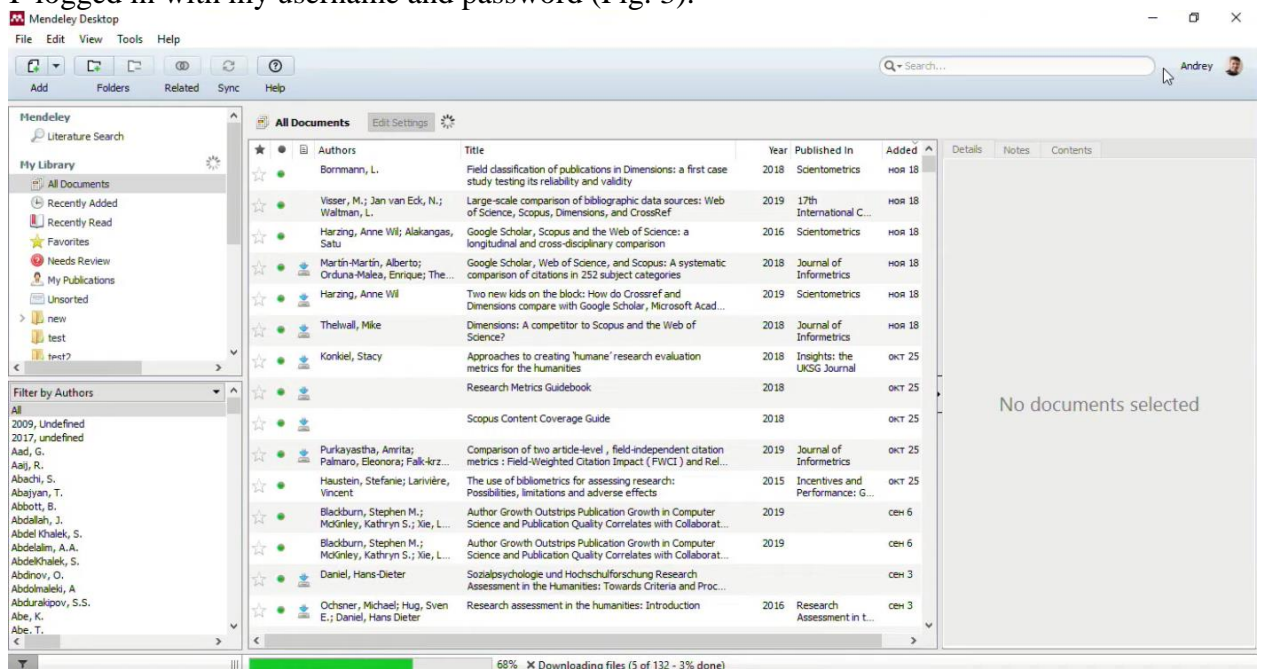
Figure 3.

One of the greatest features of Mendeley is that it allows you to easily move your library from one computer to another by entering your username and password on the computer used. A certain amount of cloud space is assigned for every user. The data that you save in Mendeley is synchronized all the time. We can access this space in the cloud by installing the application and entering your username and password and we will receive this data from the cloud. If we need to read some documents, we can just go to *Mendeley.com* and enter the log in there. For example, when for some reason you cannot install applications on a particular computer. It can be a computer where you do not have rights to do it, or a computer in an Internet cafe. There is access

only to the Browser. No problem. We can see the same thing through the browser. On the *"library"* tab we have access to the same information that you have just seen in the installed application. In fact, almost all the same features that are fully installed in the application are now available in the browser (Fig. 4).
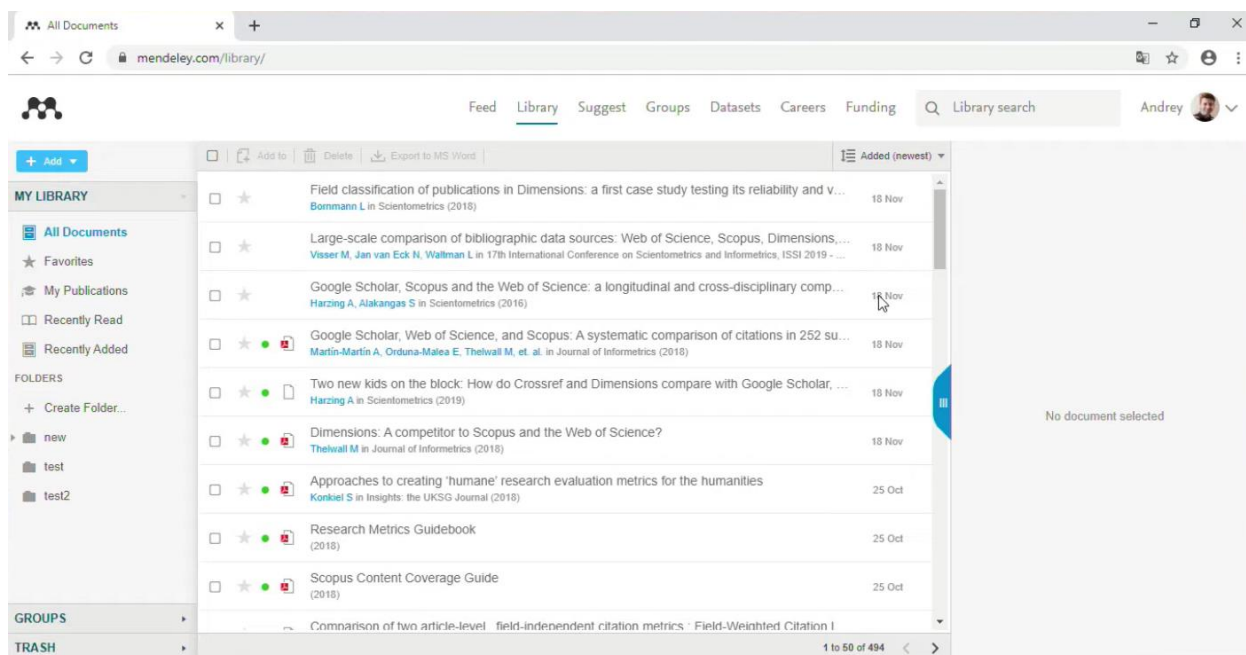
Figure 4.

A small difference is that it is quite difficult to quote in "Word" through the browser. This is probably the key difference. Otherwise, they are completely identical in terms of functionality. In my case that we have taken as an example, you can see that all the abstracts of individual documents I previously saved have already been uploaded. Now where I had the full text, you see such icons (Fig. 5).

For those who have not used reference managers, the key difference from the file system is that here a full-fledged bibliographic card is created for each object, for each article, in which information is entered in each separate field on the right: the type of publication, its name, the authors, in which source it was published, year, the abstract and any other additional data that we have in some publications (Fig. 5).
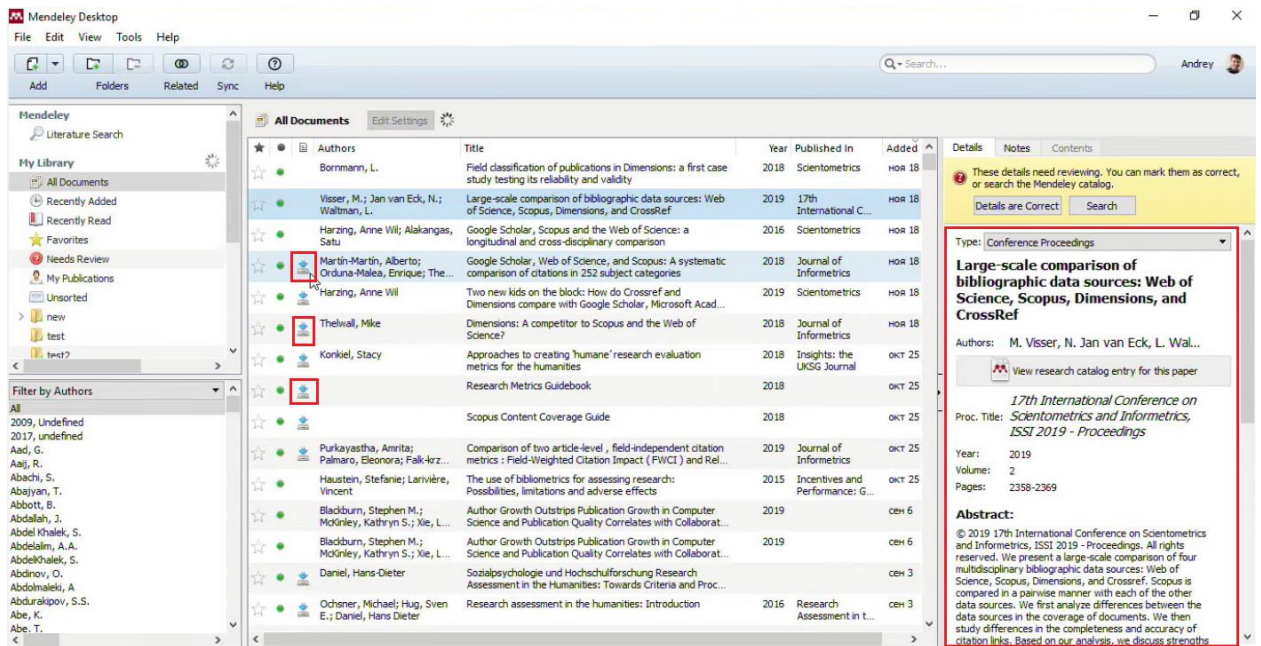
Figure 5.

What is very important is that all this data is indexed by the system. Therefore, as soon as we start some information to drive, then immediately we have a live search that conducts this search both for all metadata and for all indexed full texts (Fig. 6).
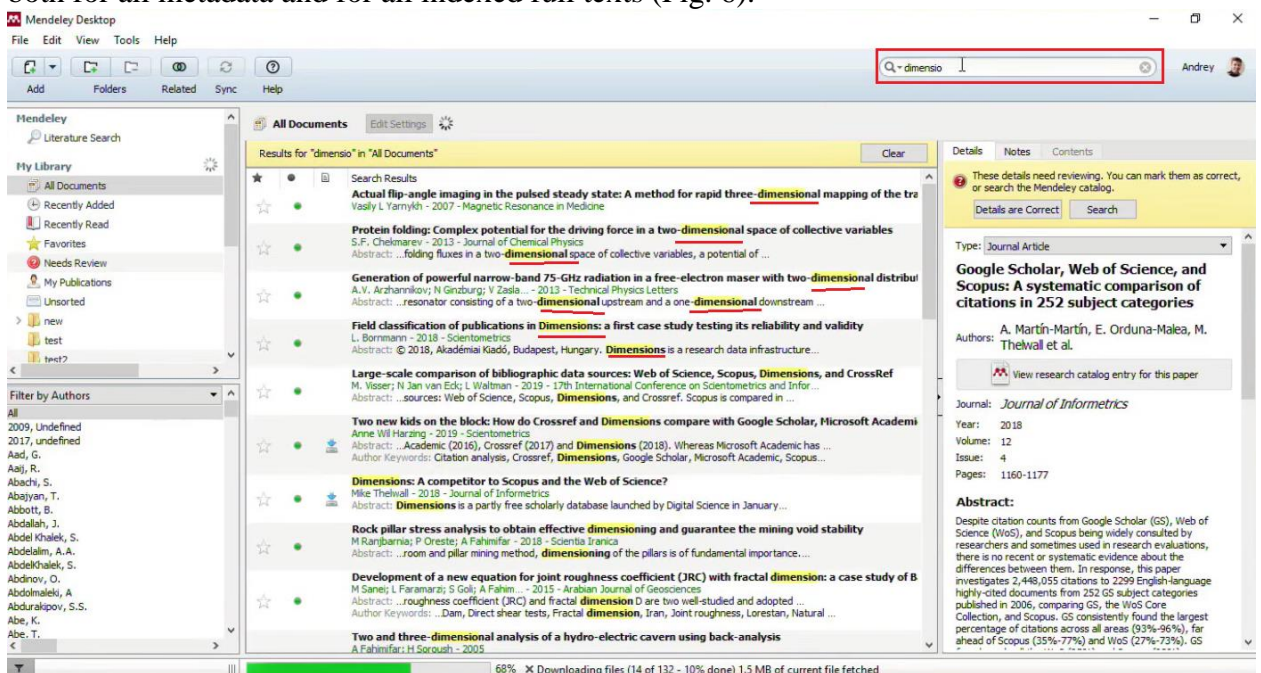
Figure 6.

Therefore, one of the advantages of such systems is that you do not need to look for the file name that I saved or article somewhere on my personal computer. If you remember, what the article was about or who was one of its authors, or where it was published, or some other characteristic information about the publication, then it is not difficult to find it. For example, the system searches for the term "dimensions" in the title, in abstracts, in full texts, and so on. Accordingly, if I find it somewhere in the full text, then this data will be highlighted to me in the text itself. Thus, such a card is created for each publication. How are they created if you do it for the first time and you are not here yet? You probably have some folders where you currently

store PDF files with articles that you use, so you can simply *add files* (Fig. 7) or specify a folder on your computer. Mendeley will check for the presence of documents that look like an article, extract this information from each of them and create a new object (Fig. 7).

For example, if you work with colleagues, you have some kind of network folder where you periodically put documents of interest to the entire lab. Then you can set up folder tracking (*add folder*) the same way and Mendeley at each start will check whether there are any new documents that would be appropriate to move here (Fig. 7).

Suppose, you suddenly decide to switch from one reference manager to another. For example, from Zotero to Mendeley or from the Laptop to Mendeley, there are standard data transfer formats. There is XML for EndNote. For the rest reference managers there is a special format, the "Researching Formation System", through which you can upload and download data from one reference manager to another (Fig. 7).

It is also convenient in situations when you have some library and it meets the criteria of additional literature on some course. Then you can *export* it as a corresponding file, as a collection and send this collection to all of your team members (Fig. 7).
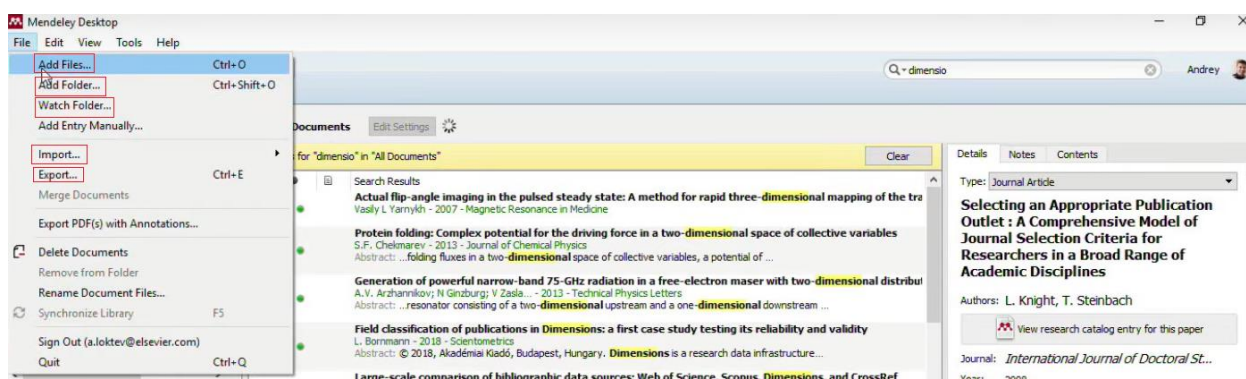
Figure 7.

In this case, they should open Mendeley, unpack this file and get a complete list of all those articles, all those documents that you would like to recommend. It will not be some separate links, it will be ready-to-use links with full information about the article.

Let me give you an example. Suppose, I want to add some PDF file from ScienceDirect (Fig. 8)..
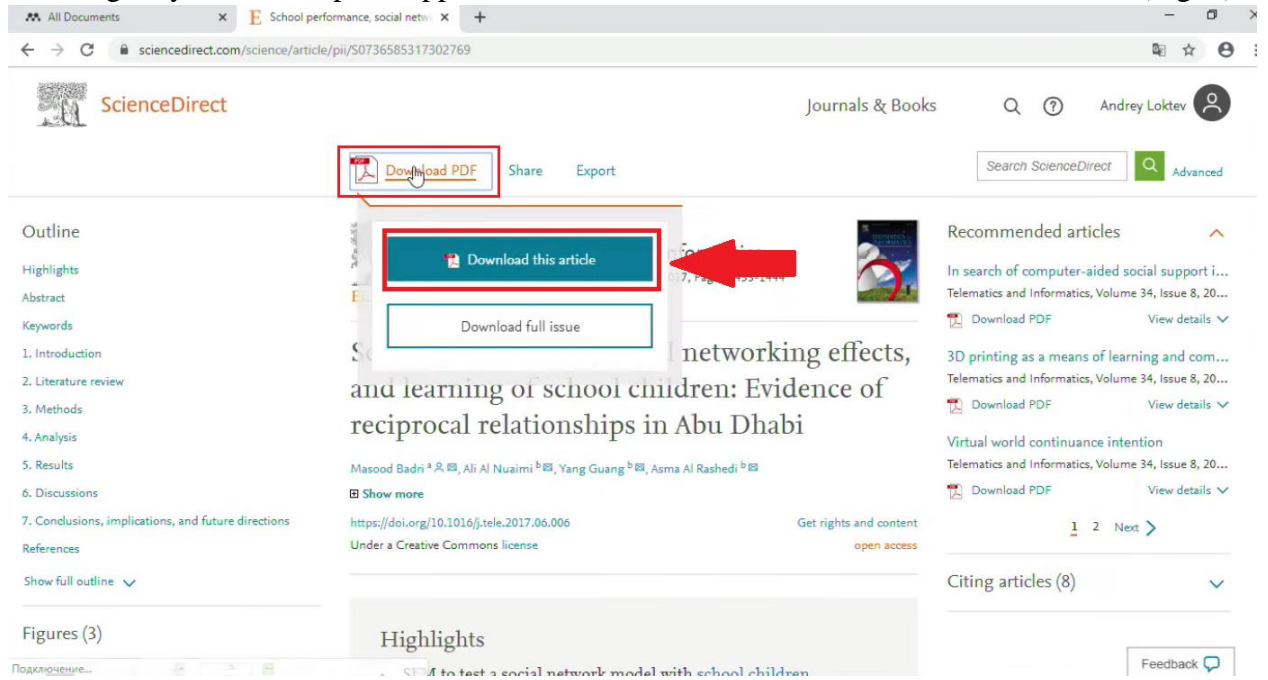
Figure 8.

I take the file and simply drag it (Fig. 9).
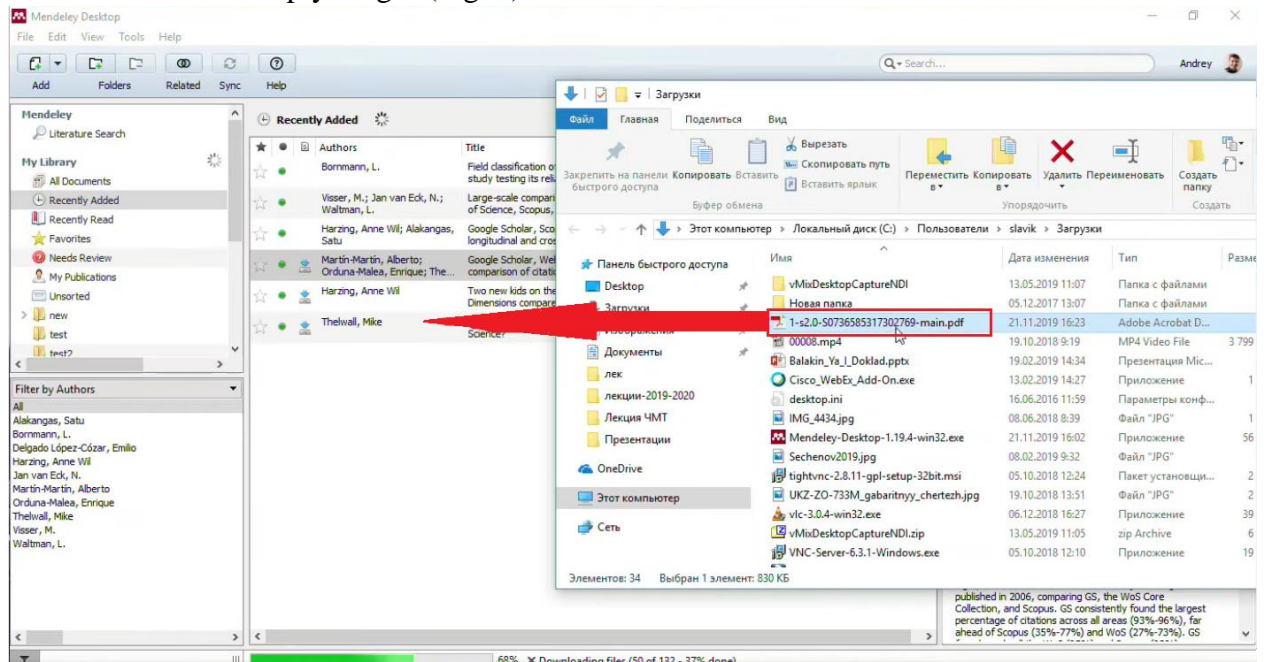
Figure 9.

It can be several files if you have saved several files. What is happening at this moment? At this moment, the system passes this PDF file into separate fields. It fills all the necessary fields of the library card itself. It is not just PDF file storage but it is completely filled data. You see, we have correctly distributed all the information on the metadata of the article based on the PDF file (Fig.

10).
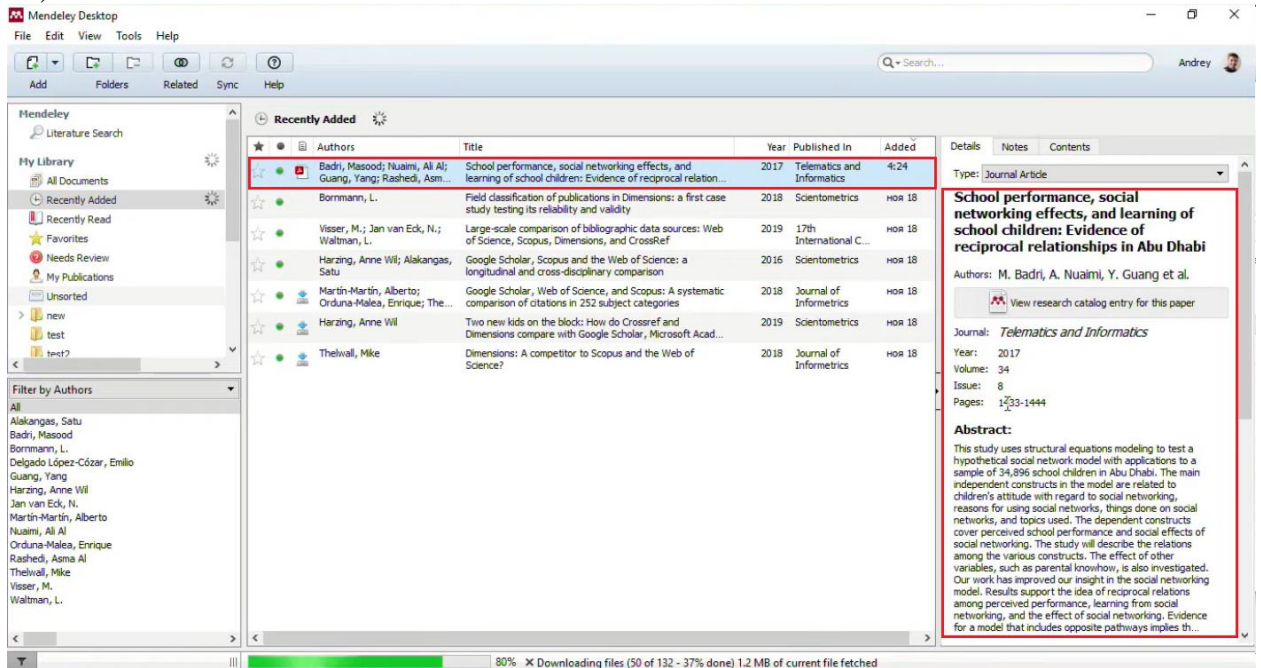
Figure 10.

Why is this important? Because we will use this information in the future when we create links in our articles. If we do not have some of this information, which is used in the formation of a bibliographic reference in the article, then we will have to manually extract it from somewhere. Usually, working with any major publisher, lay-out designers are able to fill the corresponding PDF layers with these metadata and there are no problems. But what if we do not have some of the information? There are two additional approaches. If we have a unique number for this document, for example, DOI or PubMed ID, this number allows you to restore all the missing information in the document. For example, assume that we have no abstract, no name of the journal, but only DOI. Then we can click on the link on the right and search. At this moment, the system will contact the CrossRef catalogue and pull up all the missing information for you. Let us assume that this document has not been indexed by any system yet, it is not in either Scopus or PubMed. In this case, we can always make a record manually (Fig. 11).
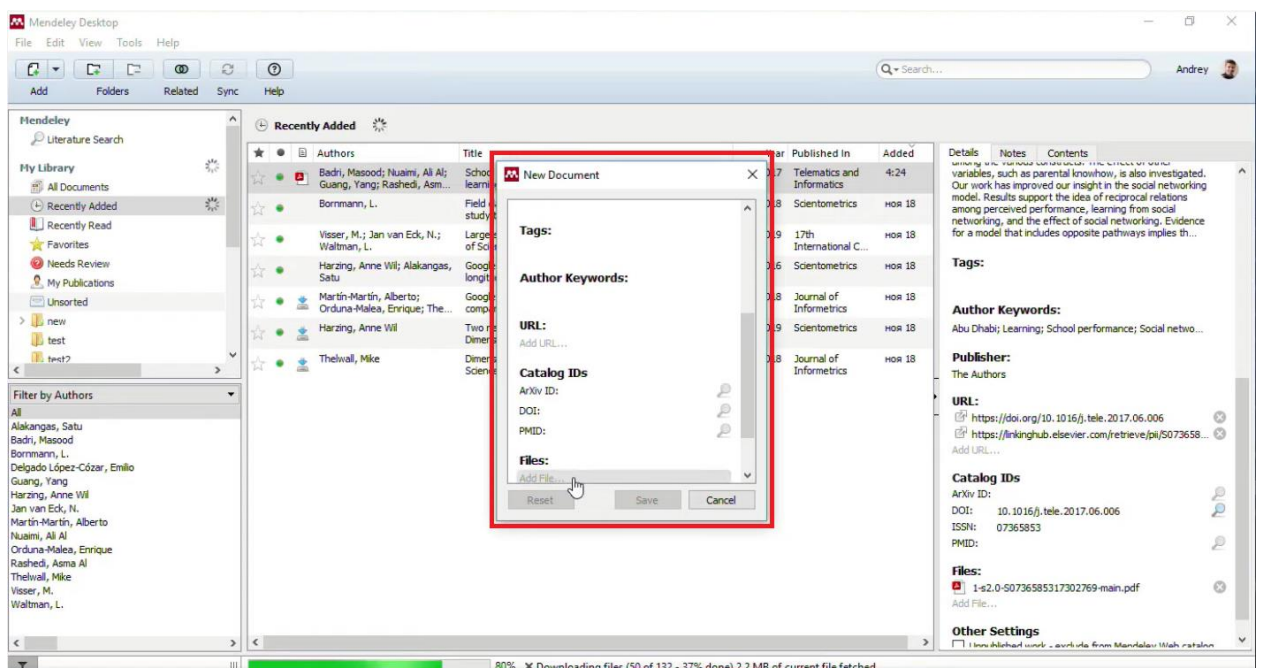
Figure 11.

You can add any kind of record yourself. You fill in the fields that you know, you attach the file and it becomes part of the libraries. Of course, I am talking about PDF, but you are in no way limited to this type of data. Mendeley can be a versatile library for your research. If you have intermediate documents, then you can also add them. Here you can upload everything, beginning with computer programs and movies and ending with some audio recordings, patents and so on. Mendeley does not limit you in any way by the type of data you save. The only thing is if it is a PDF, then you can open it directly in Mendeley, if it is any other type of data, then it is opened by an external program. If we open a PDF, it opens directly inside Mendeley.

We can read several documents at the same time, if we close the app (not file itself), and then open it again, Mendeley will restore exactly the part of the article in which we are now. It will return us to this place and we can continue reading further. There are many variants for easy reading here. You can highlight some parts of the text in color. You can add some comments to the text (Fig. 12).
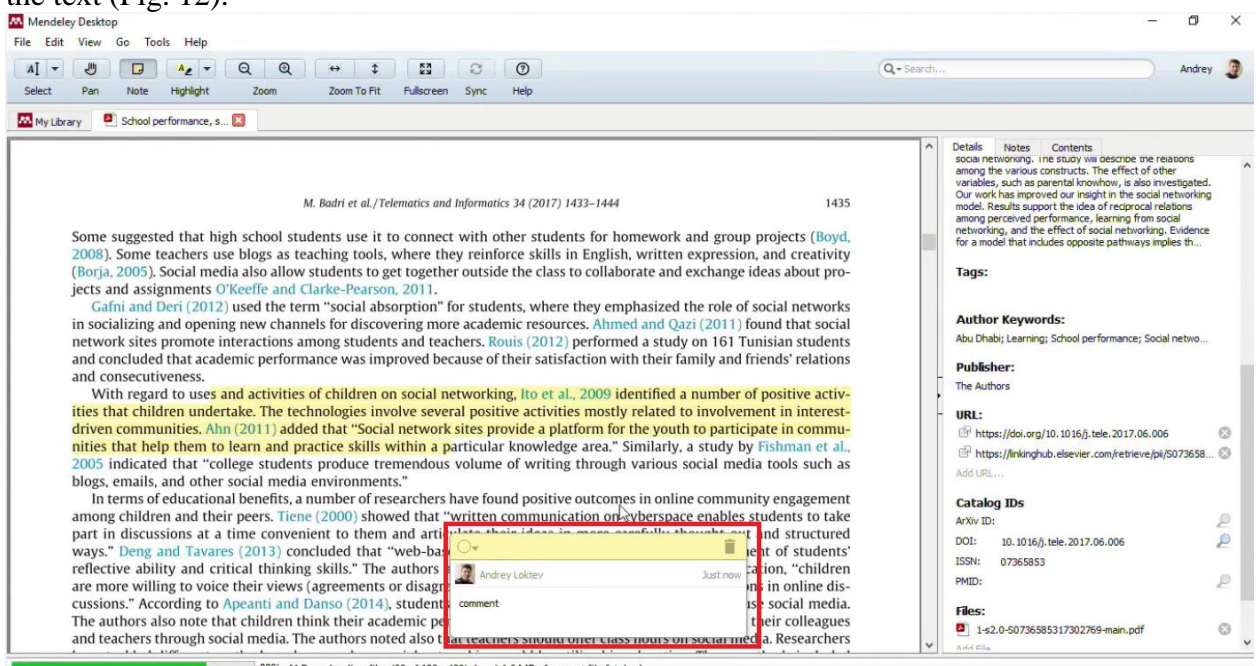
Figure 12.

Suppose you read the text and understand that you came across a good statement and it would be nice to quote it later on in your research paper. If you do not make a note anywhere, then most likely you will forget it. However, if you put a mark for yourself, highlight it in the text, then it will be saved in the program, and you can always come back. Moreover, you can print it or send it to your colleagues. This is an additional layer in the PDF, which can be removed later if necessary.

We have discussed the sources that you already have on your computer. It is clear that we will find new sources somewhere on various sites in the Internet. It can be the publisher's website, various databases. Let us see how Mendeley can help us with that. If we go to the *"Tools"*

section, we would see an option opportunity to install *web-importer* (Fig. 13).
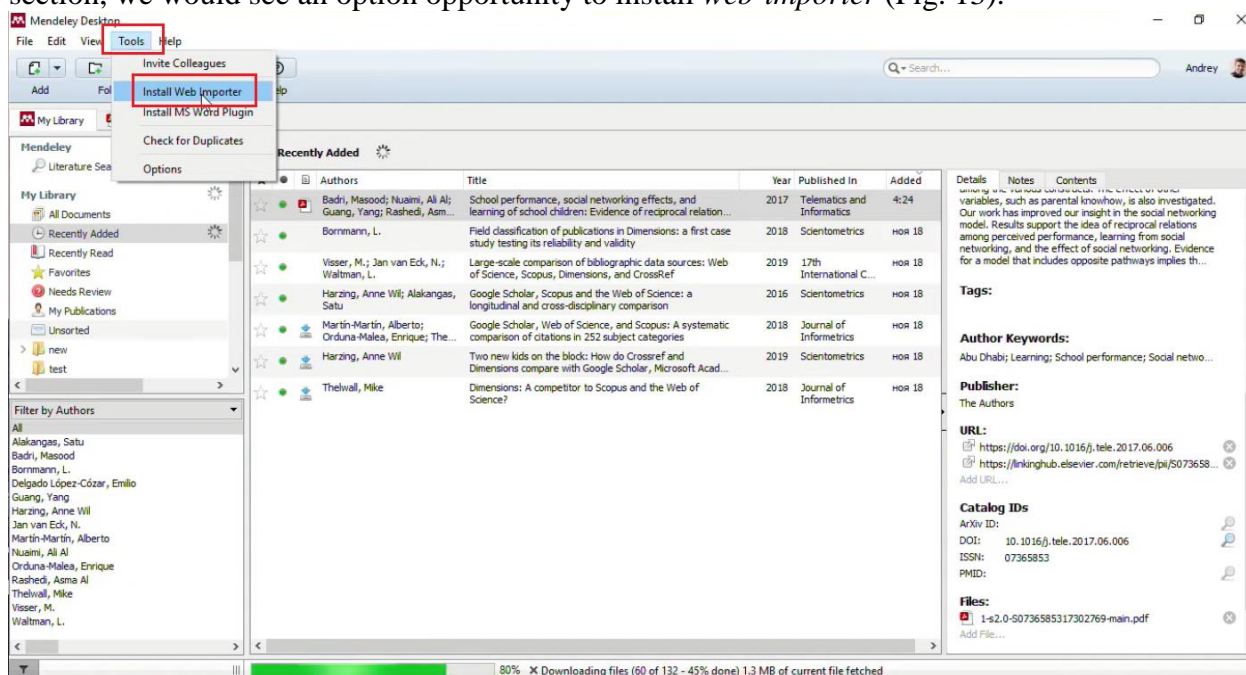
Figure 13.

This browser plugin allows you to easily save data from any site where we have scientific publications.

The plugin is available for most browsers, both for Google Chrome and Firefox. If you use Internet Explorer, then you can simply save a link to your favorites, by which this web-importer will be called and will do the same. Now, discussing my examples, we install this in Google Chrome.

How does it work? Let us go to some site that is not related to Elsevier, *Scholar.google.com*, for example, and let us do some kind of search. For example, "gene sequencing".

We have found quite a large number of articles. What is our standard procedure if we want to use these articles in our literature review in the future? We would have to scroll through each of these articles, find metadata, find their PDF and save it somewhere so that it can be further quoted. This becomes easier with Mendeley. We just need to click on the link once to log in (Fig.

14).
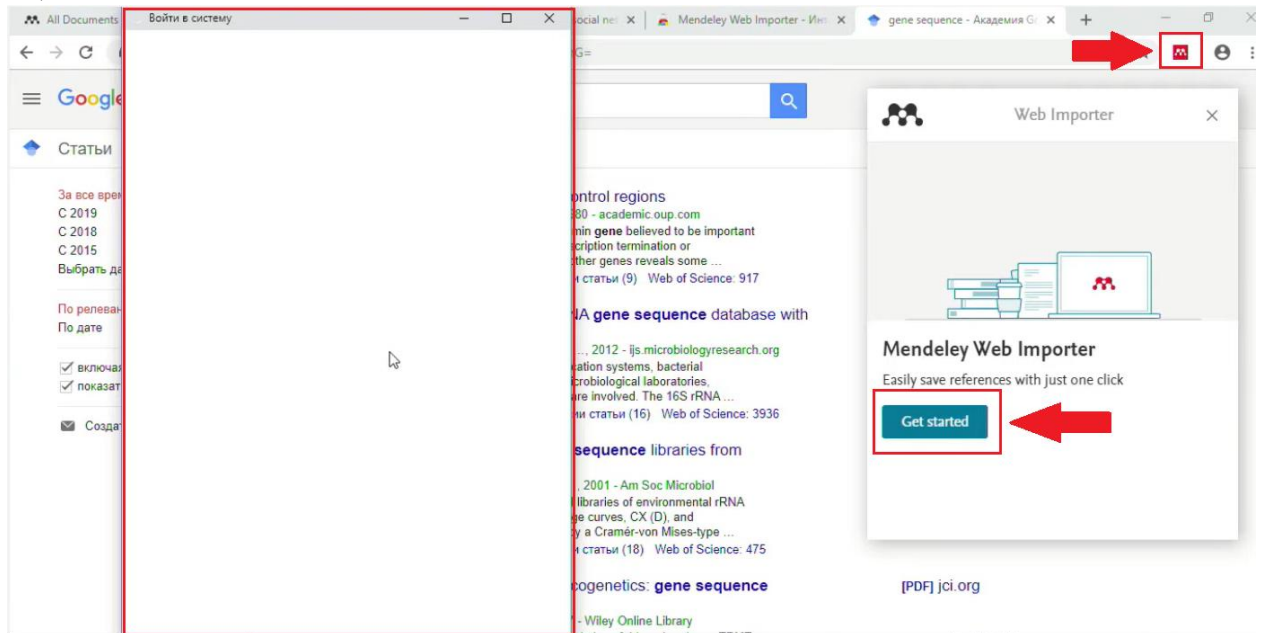
Figure 14.

Mendeley analyzes if there is something that can be interpreted as a scientific source: an article, a book, conference materials, and so on, and on the first page Mendeley "saw" 12 bibliographic links. If we scroll further, it will "see" more. Note that some of the links have a PDF icon. Mendeley looks inside the link and checks if there is a full text there, whether it can apply and immediately extract the full text of this article. This PDF mark tells us that most likely, we will be able to save not only the bibliographic record, but also the corresponding PDF. Then we can decide where to put these documents. For example, in a specific folder. Once the document has been added to the library, we will see a mark. For the next document, we managed to add both the link and the PDF itself. Where are these documents being added right now? First of all, they are added to your Cloud (file storage). The Cloud that is linked to your profile synchronizes with those Mendeley installations that we have open now. If we open it right away, we will not see anything here, because initially it got into the Cloud. However, if we synchronize this content, then this information will be uploaded (Fig. 15).
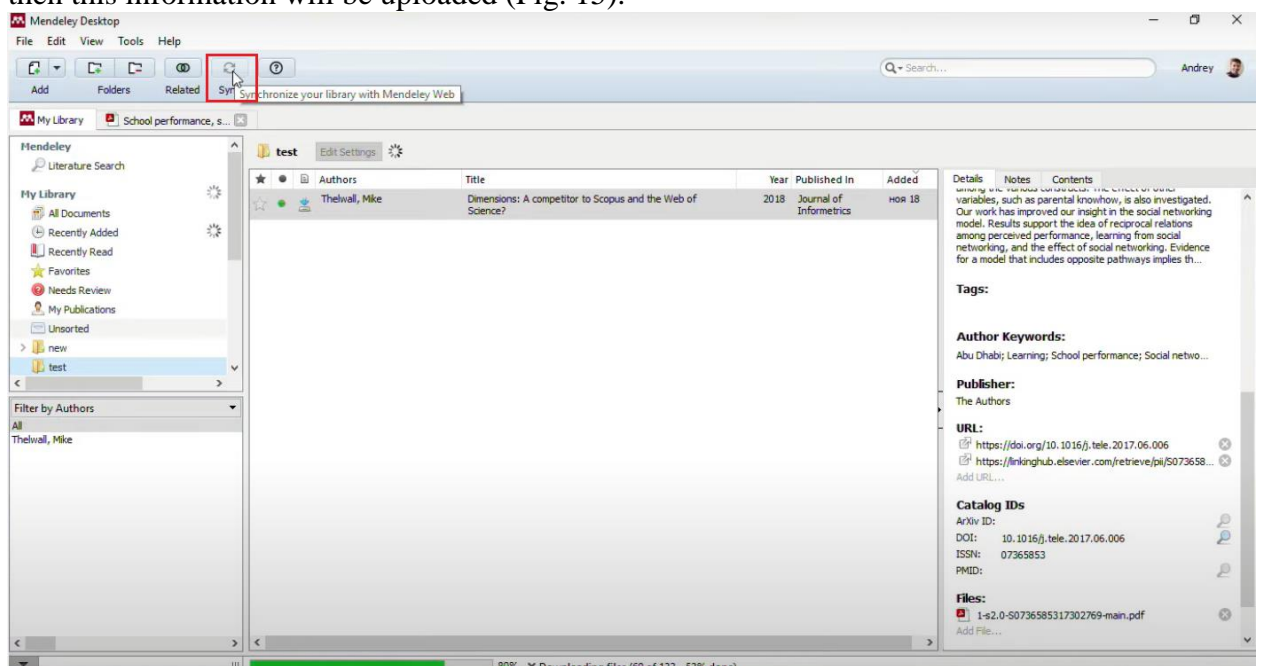
Figure 15.

This tool works from any publishing site, from any database. If you work with ScienceDirect or Scopus, then it is possible to use both Mendeley and the built-in functionality for saving directly in Mendeley. One of the options is to click *Mendeley Web Importer* and then Mendeley will recognize which documents are here.

The second option is to export simply by the Export Button, if you did not install Mendeley Importer. Similarly, if we work in Scopus, then in the same way we can launch the Mendeley web-importer or select the necessary documents, all or some individual ones, select Export and select Export Mendeley.

Therefore, we can always look at the documents in the electronic version through the browser. Now we can see that all three documents have already appeared, two of them we have saved from Google Scholar, and one of the documents we have saved from Scopus. This information has already appeared here (Fig. 16).
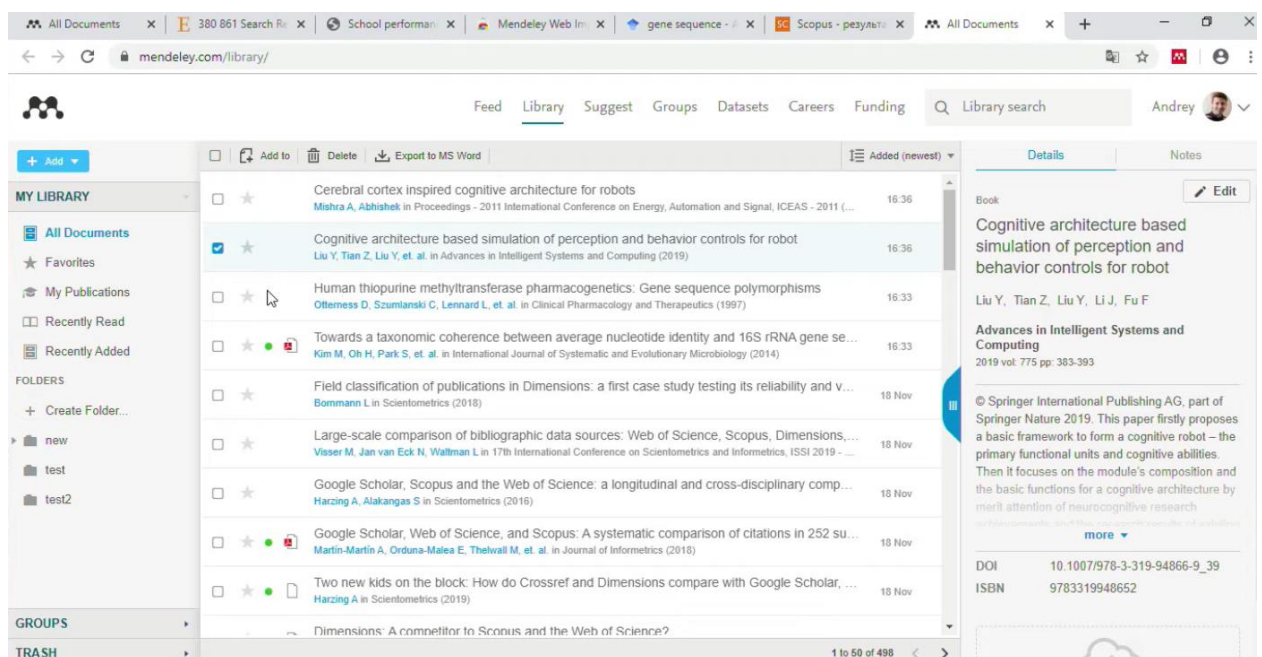
Figure 16.

The document that we had as PDF also appeared here.

What else can we do? We can organize files into folders, create an internal structure, we can assign certain tags to documents for those cases when you need, for example, to make some project selections. Suppose, you have documents structured according to a convenient principle, and then you want to make a new selection for a newly appeared task. It is enough to make a mark on the necessary documents. They do not need to be moved anywhere. Suppose, I assign a

new tag "Project 1" (Fig. 17).
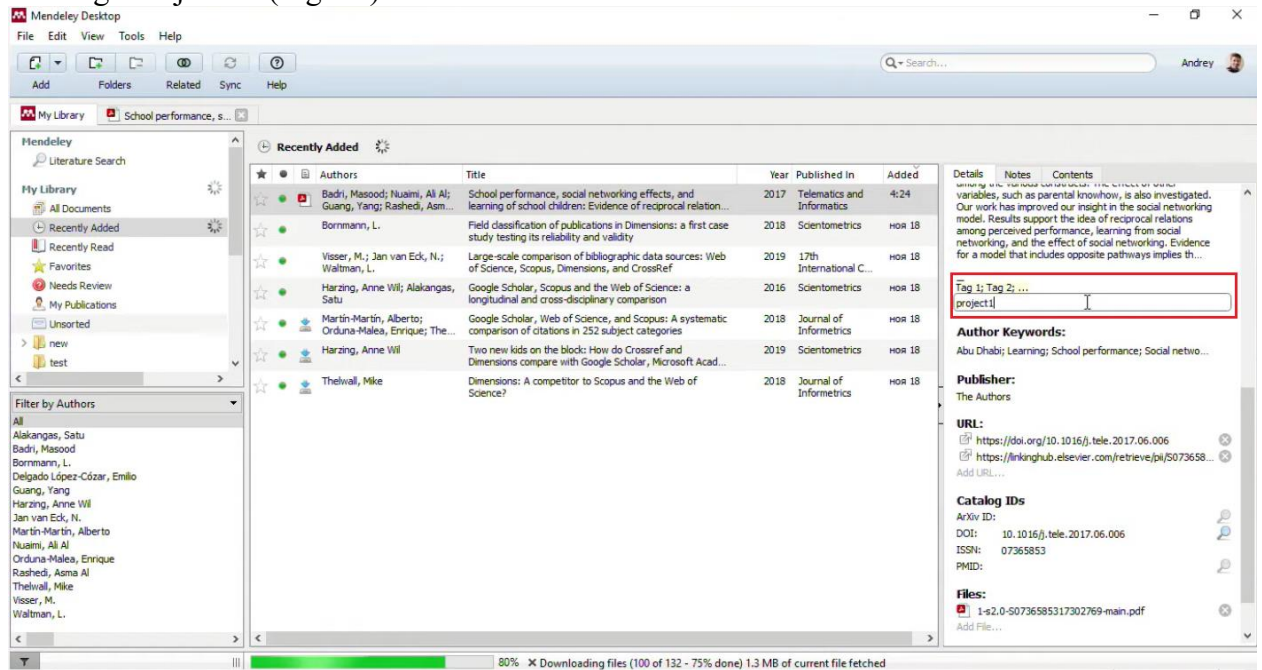
Figure 17.

Then I can select documents that relate to this tag (Fig. 18, 19).
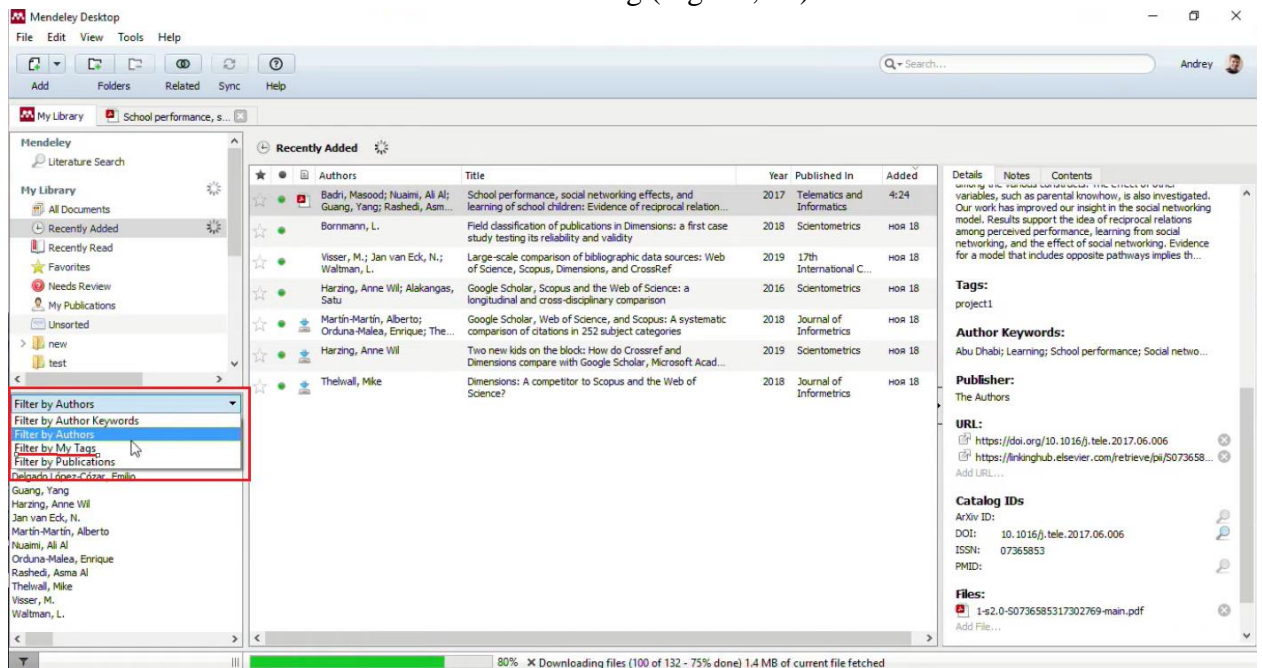
Figure 18.
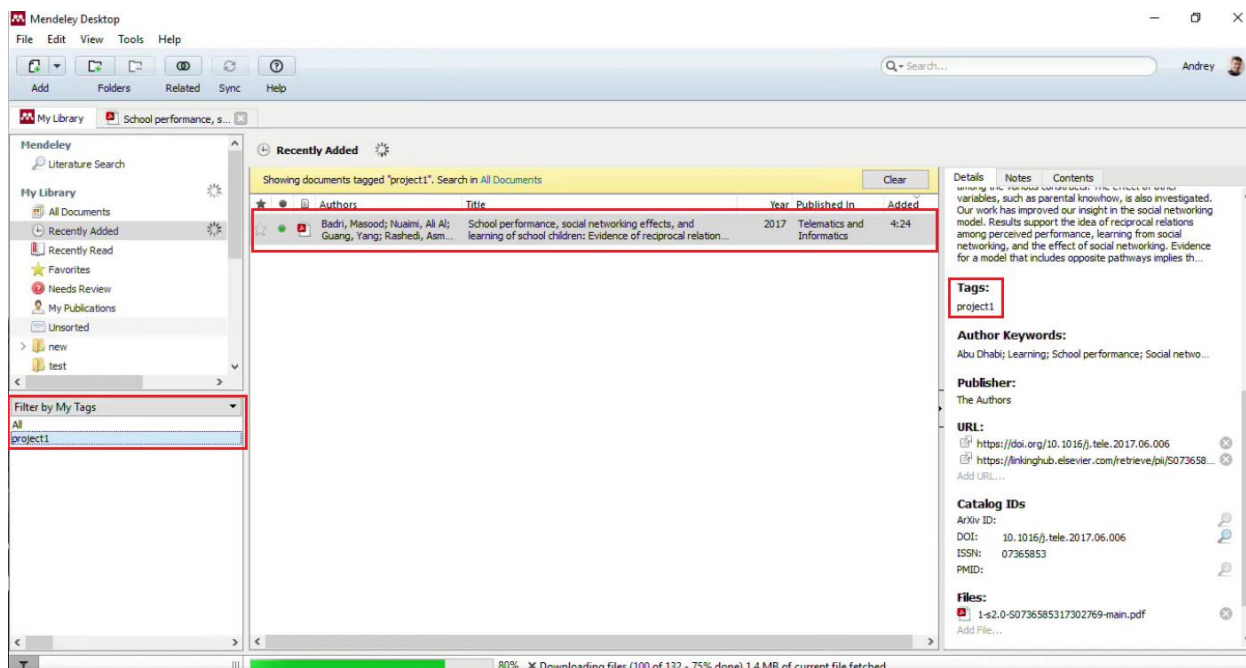
Figure 19.

The document continues to stay where it is, but this selection appears to you instantly. For those who are used to using the file structure, Norton Commander, and do not trust anything else, Mendeley can also be useful. How? Mendeley can rename the files that you have saved in the library. We have seen that publishers usually call them in the way that nothing is clear. However, if you processed these Mendeley files, these PDF files are still lying where they were, but a card is now attached to them, where their metadata is pulled out. We can do the opposite and use this metadata to rename these files. For example, in the structure author-year-title of the publication.pdf., and even if you delete Mendeley from your computer, you will still have the names of the files made in such a way that it is easy to search for them. You can make a flat structure. When you have just renamed files in your folder, you can make an internal folder structure using the same data about authors, journals, titles and years. If there are many authors, it usually puts the first one and the other**s**. Let us look at the part of the reference manager's functionality that saves time for a researcher. I am talking about working with links. To do this, Mendeley can integrate into a text editor. In this case, we will integrate with the Word. To do this, it is enough to install the Word plugin in the *Tools* section.

Let us now launch the Word and see what we have got. We go to the *Links* or *References* tab. In the center, you will see a new block called *Mendeley Cite-O-Matic* (Fig. 20). Cite-O-Matic is a block for working with your library, which allows you to form links automatically referring to those documents that were previously saved to the library. How does this happen? Suppose, I am writing some article. At some point, I need to insert a link. Accordingly, I go to this section, click

the *Insert Citation button* (Fig. 20).
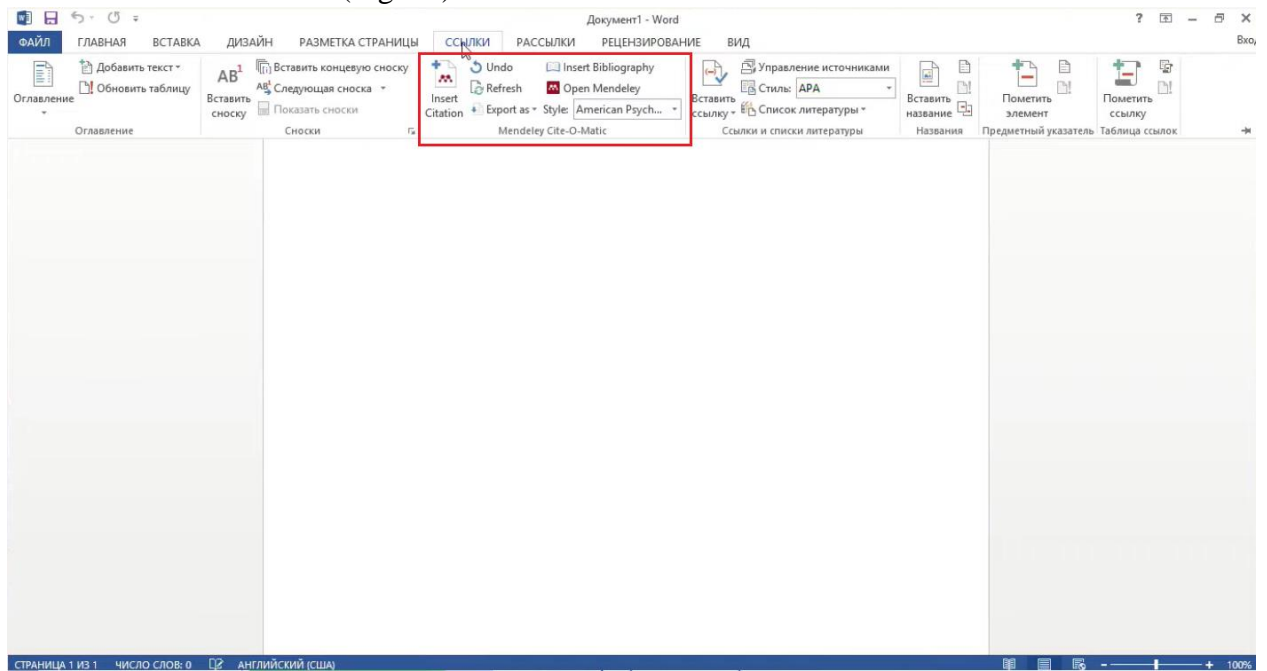
Figure 20.

Then I have the same search box that is used in Mendeley (Fig. 21).
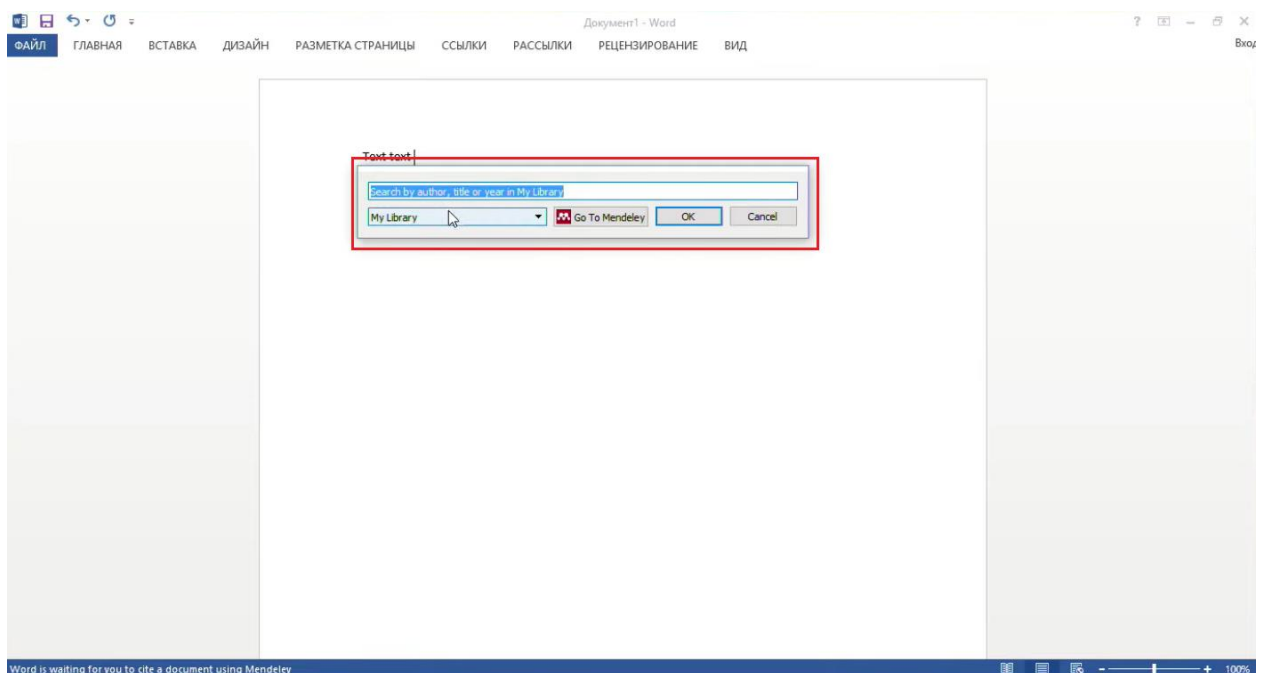
Figure 21.

Here I can start searching for documents, focusing on any part saved by Mendeley.
In this case, I am looking for the word *Scopus*. I managed to find it because it was saved from Scopus. If I need to make a multiple link, I can immediately continue and enter something else.

The new link will be created (Fig. 22).
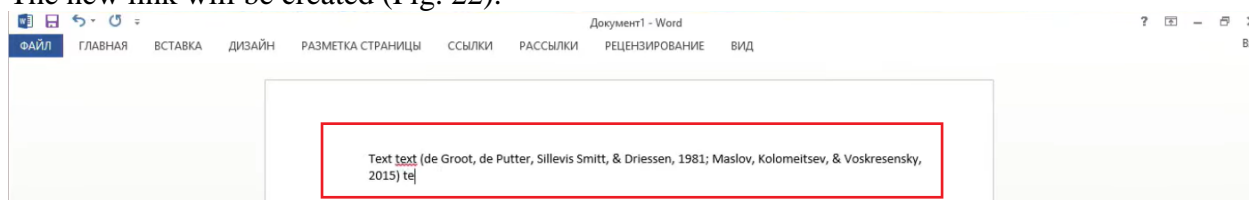
Figure 22.

I want to write another text. Then I insert another link. Suppose, I want to make some adjustments in this link. For example, I want to quote some specific page of this saved book. Yes, it is possible (Fig. 23, 24).
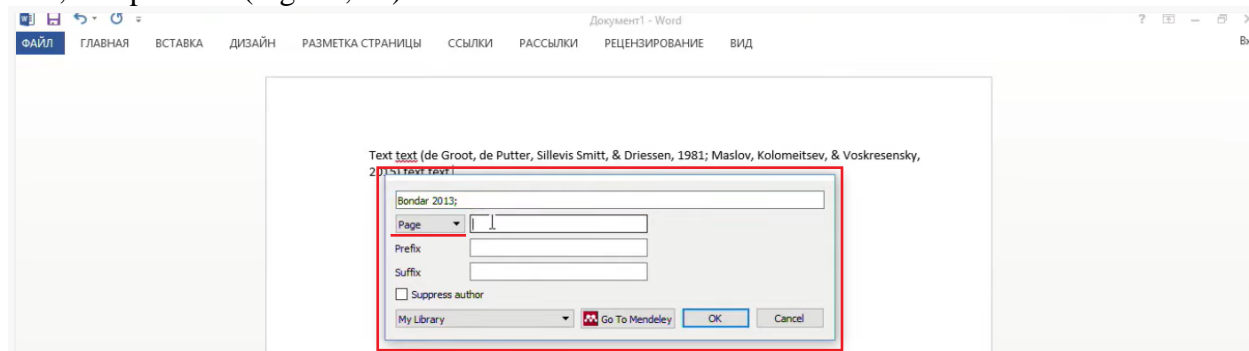
Figure 23.
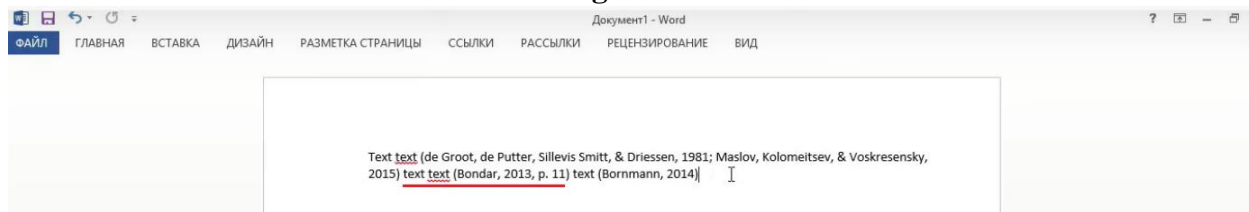
Figure 24.

There may be a situation when I do not find the right document with this search. In this case, I can go directly to Mendeley and use the standard interface here, find the document I need and then click *Cite* (Fig. 25).
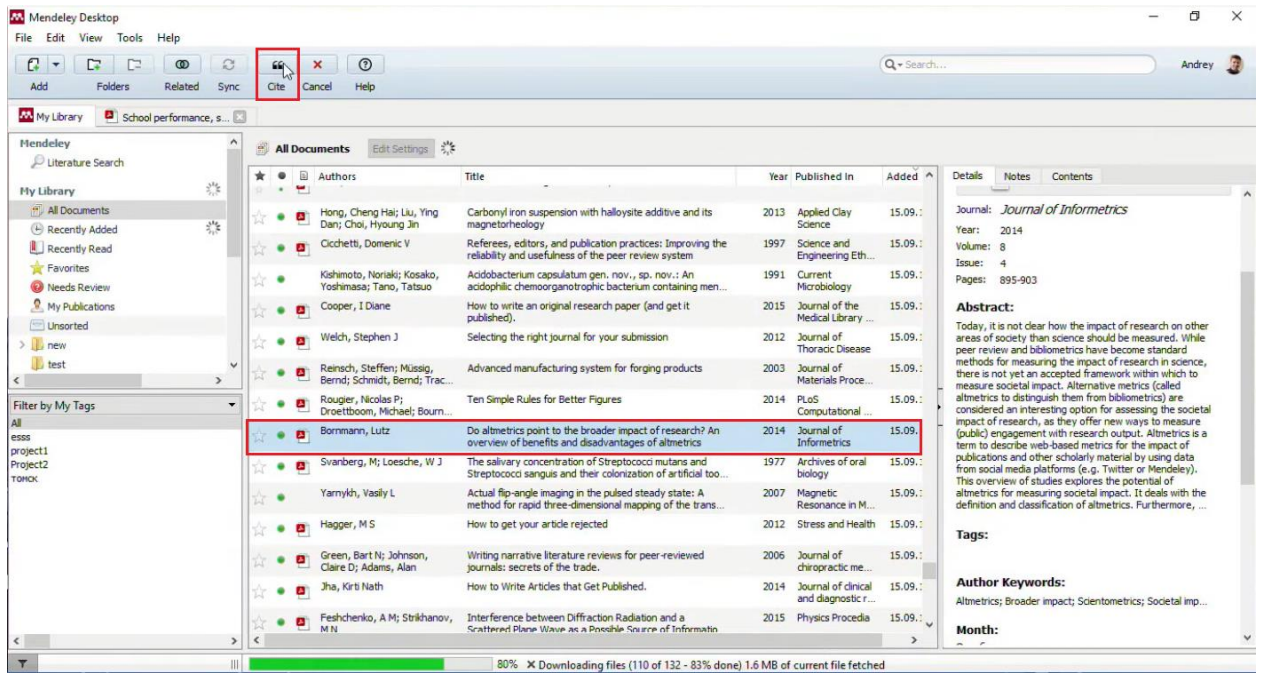
Figure 25.

Suppose I wrote my own document. After that, I need to create my bibliography in a simple way. Just click *Insert bibliography* (Fig. 20). As a result, the list of the sources that I use is created (Fig. 26). That is it. I have done the bibliographic part of the work.
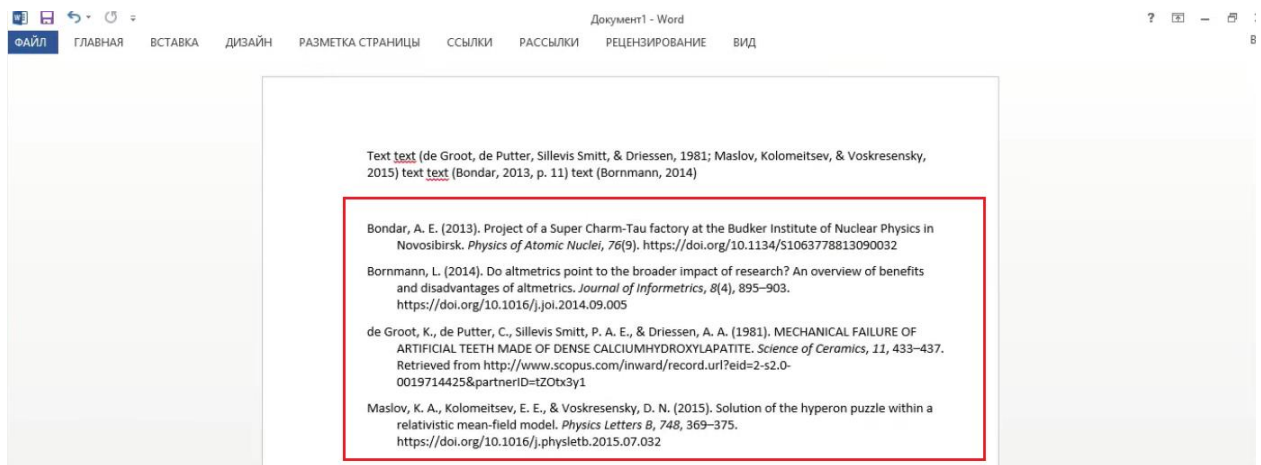
Figure 26.

The obvious question that might have is how you adapt this to the style of the journal in which you are going to publish. It is possible. Mendeley refers you to the largest library of styles. This is a *CSL style library*. There are 6000 styles there. By default, when you first install it, you will probably have 8-10 basic styles among which you can choose and automatically the entire document will change (Fig.27).

For example, I switched from the APA style to the EEE (triple E) style. You can see that everything has been changed for me. Both the designation in the text itself and in the list of references. If your article is submitted in the Nature Journal, there are styles with upper footnotes. Obviously, not all styles are here. If you want to add some styles, then you need to click *"More styles"* (Fig 27.) and switch to the *"Get more styles"* tab (Fig 28.)
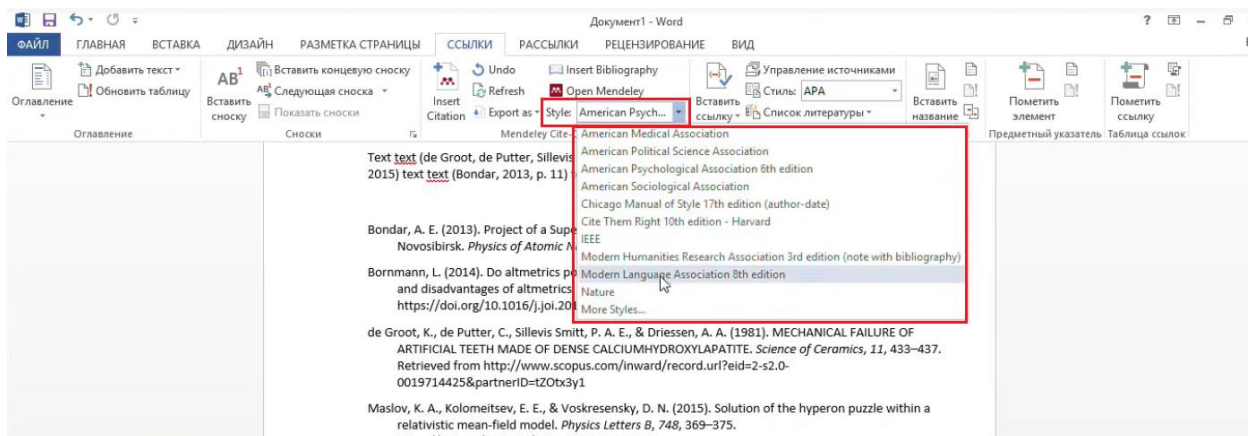
Figure 27.

At this point, we are referring to the CSL library. This is not a Mendeley library, but it is openly filled and used by many reference managers. Therefore, the styles in it are quite relevant. For most journals there is a nominal style. If we start writing the "journal of…", the nominal styles for the corresponding journals will appear (Fig. 28).
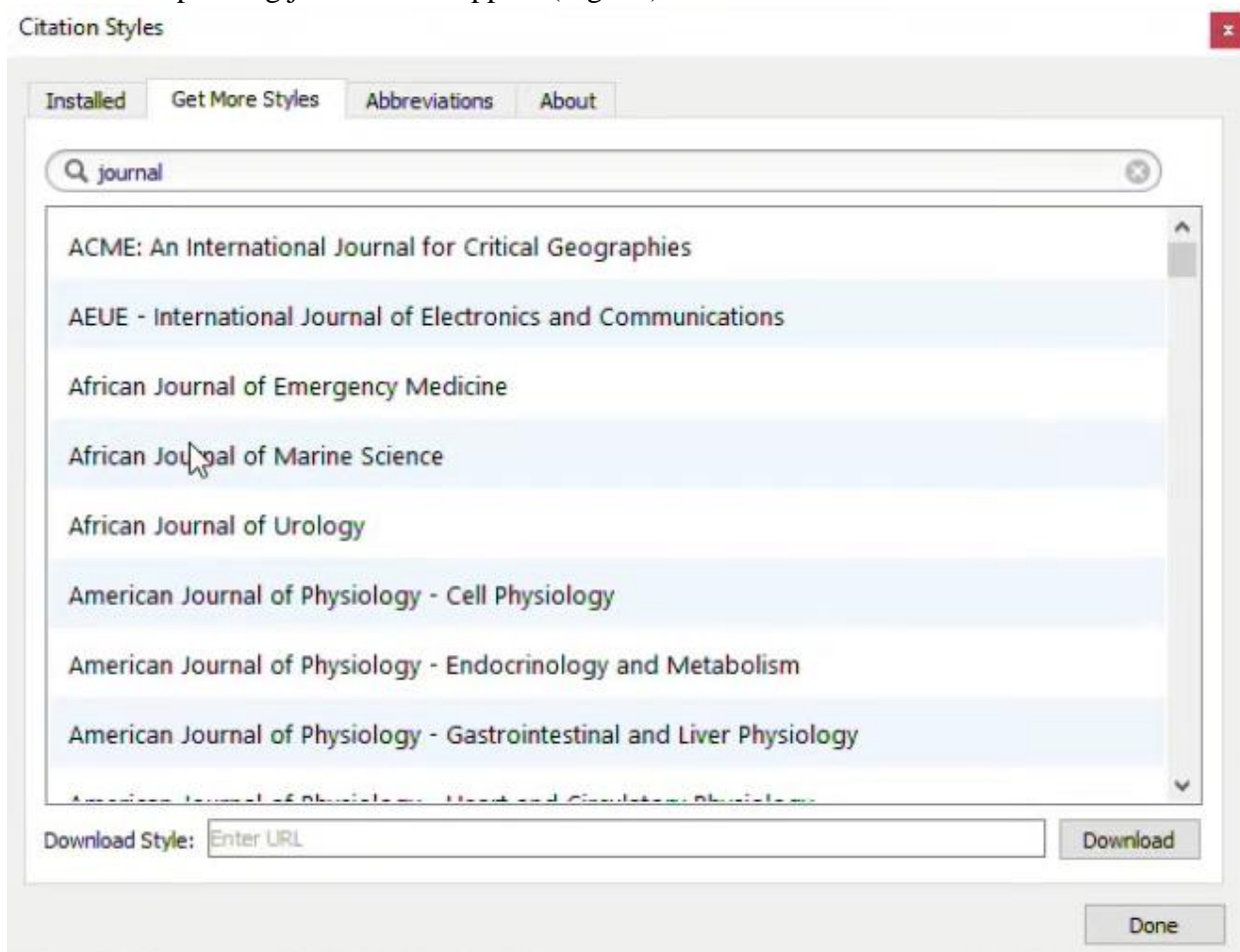
Figure 28.

When you design an article, you should look at the authors' guide. It will most likely indicate how the corresponding journal is named in the CSL library.

This is the main functionality of reference-manager. It is standard for most systems; it is quite similar. The difference between these will be that Mendeley is a free system. It is not linked to any subscription; it is not related to the fact that you have a subscription to Scopus and

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ScienceDirect as university employees or students. This is a completely free product without any additional restrictions. However, in fact, from the moment when I first talked about it (it was probably 5-6 years ago) Mendeley has grown into a whole family of solutions. The easiest way to describe them is to open the information about Mendeley on the website. You can see that we have 7 different links here at the top and behind each link there is a separate and fully functional solution, which is collectively called Mendeley (Fig. 29).
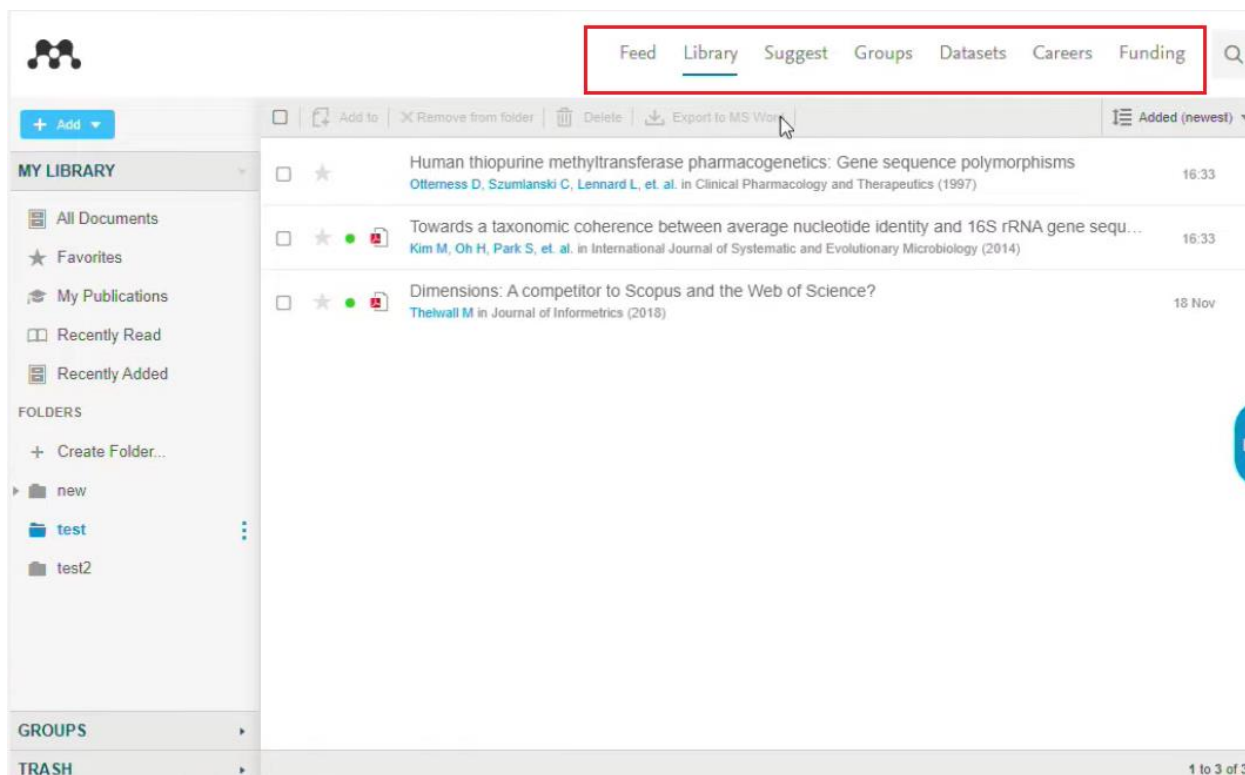
Figure 29.

We talked about what Mendeley is as a library. Now, we will talk about all the other sections. I will start with *"Mendeley Suggest"* as the simplest.

Mendeley Suggest is a system that offers you scientific articles based on what you save and what you read. It analyzes keywords, analyzes the data of those articles that you have already added and suggests what else is new, which is as close as possible to the previously saved topic. If it seems to you that it is useful and interesting, you can add this information to your library right from here (Fig. 30).
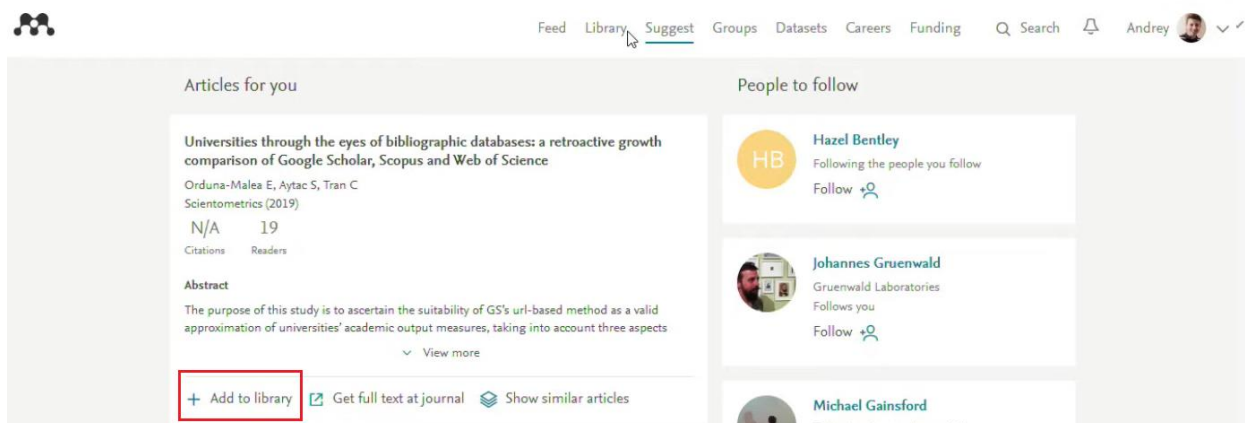
Figure 30.

Any offer can be expanded and viewed again. For example, if I recently saved an article there by Waltman L., then Mendeley offers me additional information. It shows a citation based on Scopus for each article and shows information about how many times this article has been saved by other Mendeley users. It is quite useful when the article has not yet been cited.

Now some concluding comments on frequently asked questions.

People often ask where the articles Mendeley offers us to read come from. They are either in Scopus or in Mendeley. It is not only an individual storage system, but also a collective storage system. Because we do not only store it in our personal profile, but we can publish it on a large social network. Mendeley is also a social network. When the system appeared, its founders were just thinking that each of the researchers separately stores their documents in folders, but there is no single convenient interface for exchanging these articles. Therefore, every Mendeley user has two sides. There is an internal side-this is what I work with on my own. The other side-I have the opportunity to create my own personal profile, post my publications there, find colleagues who are interested in me, indicate my research interests, etc. Even if you do not have a publication in Scopus right now or not all of your publications in Scopus are reflected due to the fact that these sources are not indexed in Scopus, nothing stops you from creating your profile. This profile is public. It is indexed by external search systems. This profile is personal. For example, my first and last name are indicated in the link and this link is permanent. To post some of my publications here, it is enough for me to import them from Scopus, if there are any. If there is none, there is a special section "My Publications", where I can simply transfer my documents and after that, it will automatically appear on my profile. Moreover, you can link the profile to other systems. I can link it to ORCID, I can add it to Scopus ID, and I do not have to update the information here manually. Additionally, we can add information where we studied, where we work, etc. You can find colleagues and follow their updates. What else is available in terms of socialization?

There is a possibility of *Group work* (Fig. 31).
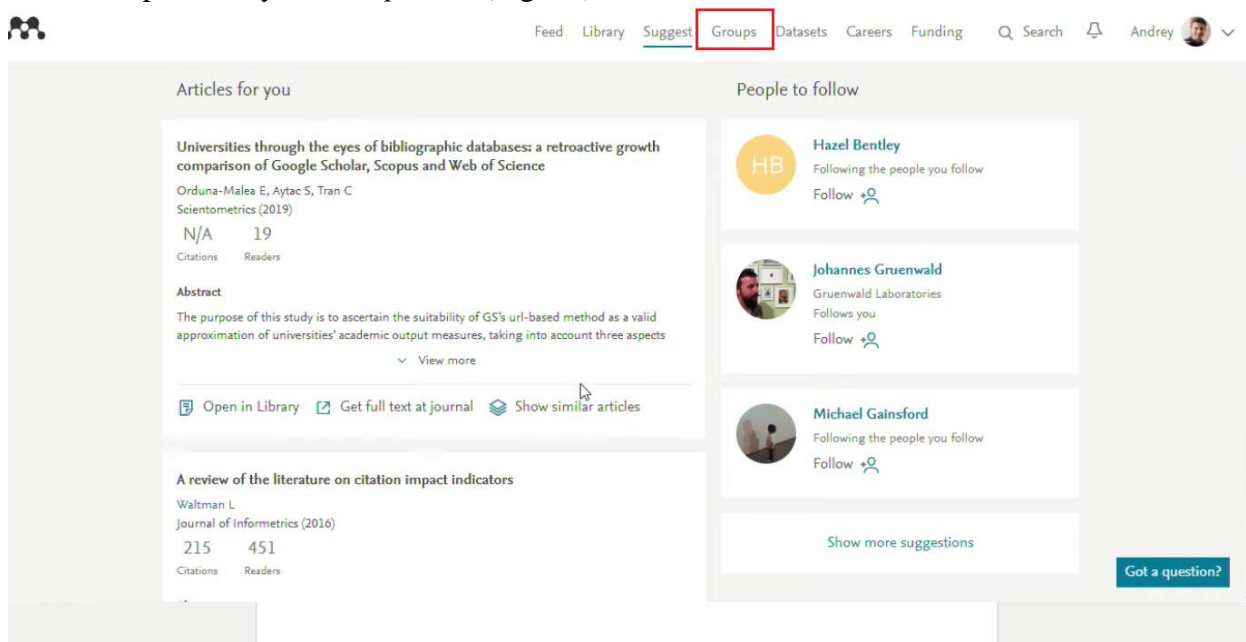
Figure 31.

You can participate in the work of two types of groups. These can be closed groups that consist of its participants, its creator, and me. It is not visible externally. Accordingly, we can discuss the draft of an article inside. On the other hand, there can be open groups. It can be our labs or our scientific schools, where we want to promote our research, where we want to share with others

what we do and what we publish, even if it is again not indexed in the leading databases. You can find some groups of interest, conduct a search on your topic. Let us look for groups on *"Data Science"* (Fig. 32).
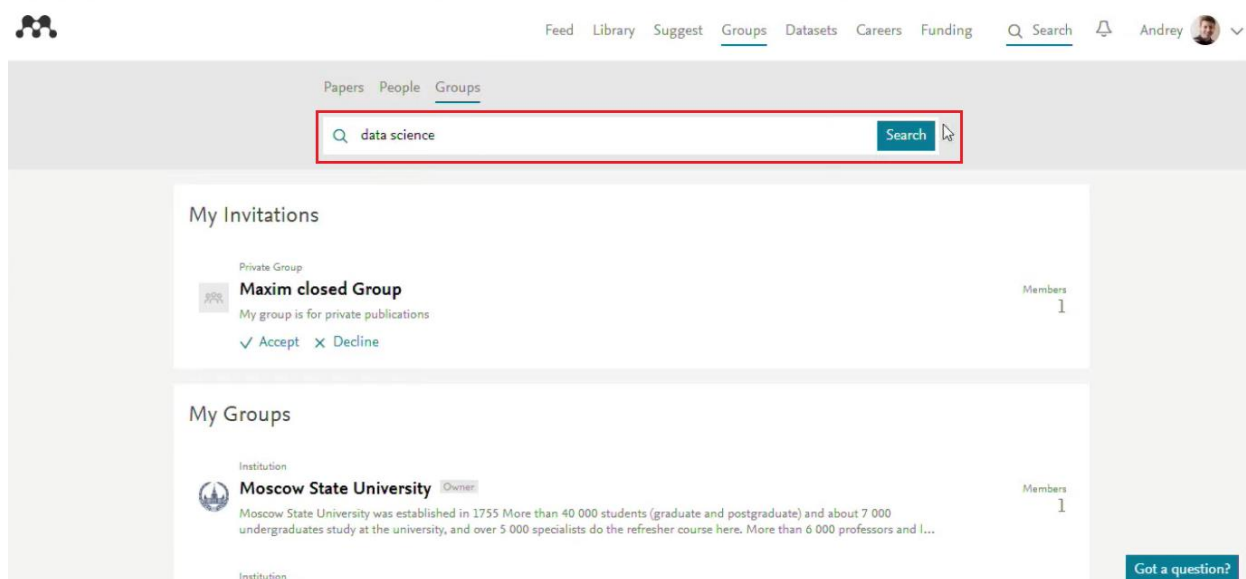
Figure 32.

I can join these groups (Fig. 33).
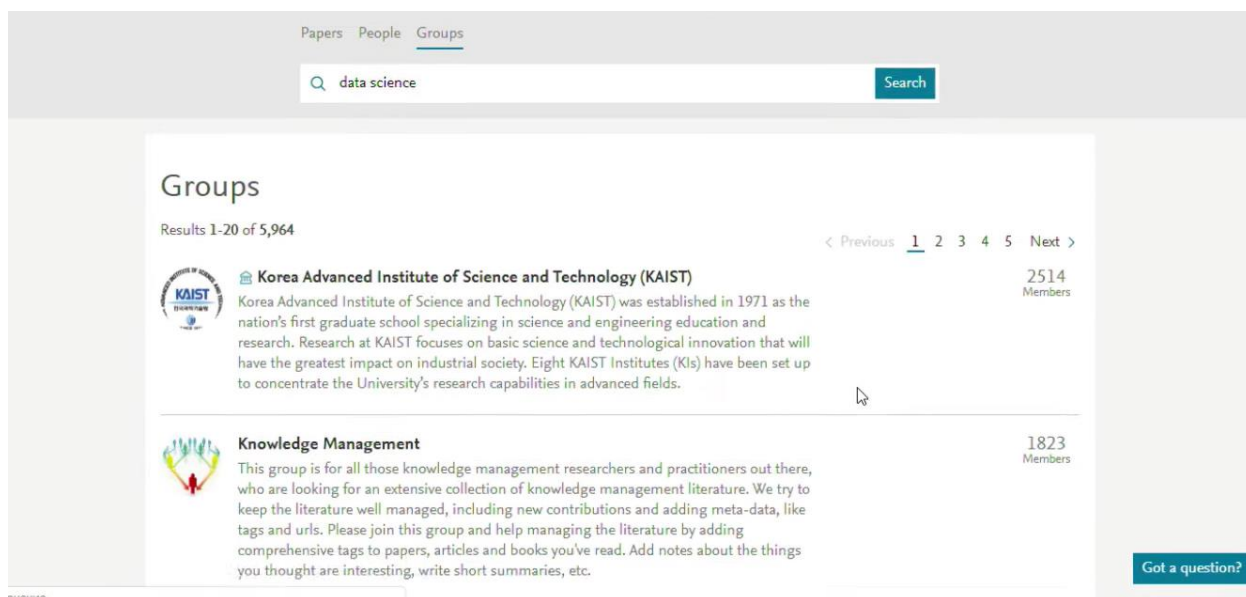
Figure 33.

I can read the content that has already been posted, discuss it. This group is based on the research interest of its members. After I joined the group, I can also offer my publications to the group members. If I see that the interest of the group is very close to the subject of my research, then this is a great opportunity to advertise my publication to other scientists. Therefore, in addition to just installing Mendeley as a reference manager system, I recommend you create a profile for yourself, update it, indicate your publication achievements, other achievements, and research interests. I think that in any case it will help to increase the visibility of your research and you personally.

There is the *"Feed"* section, respectively, where you receive updates on your groups, on your colleagues with whom you have established contacts through Mendeley. This is a group section

where you can do group work with other researchers. We have sorted out four out of seven. There are three more to go. Let us go from left to right (Fig. 34).
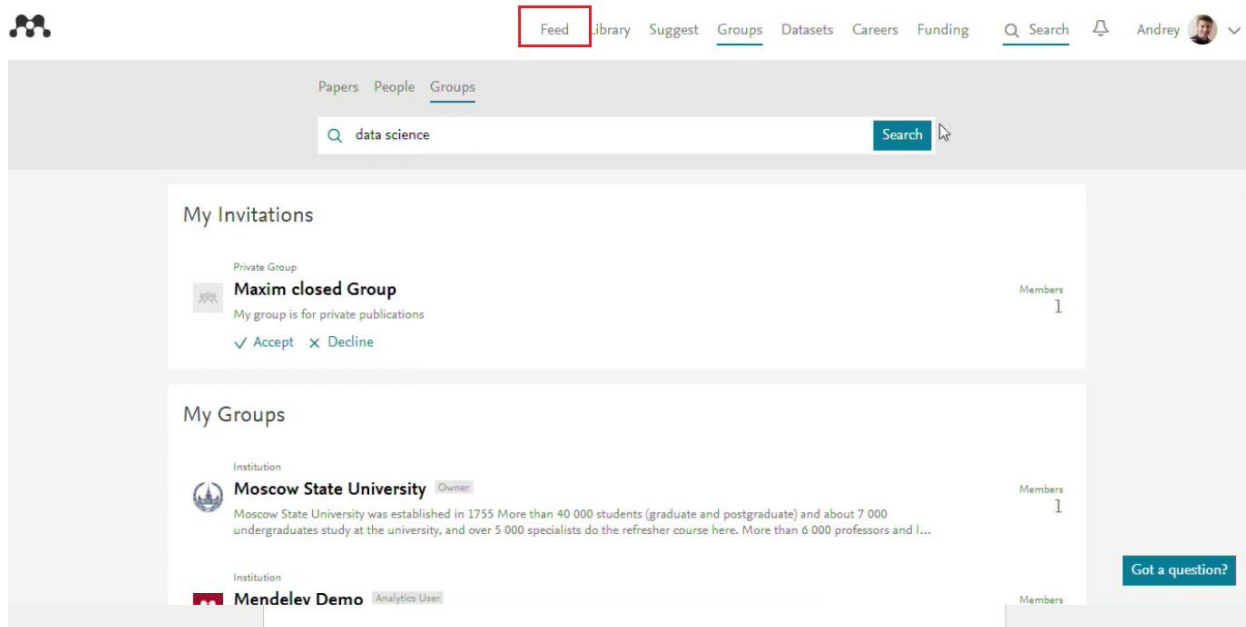
Figure 34.

Let us go to *"Datasets"* (Fig. 35).
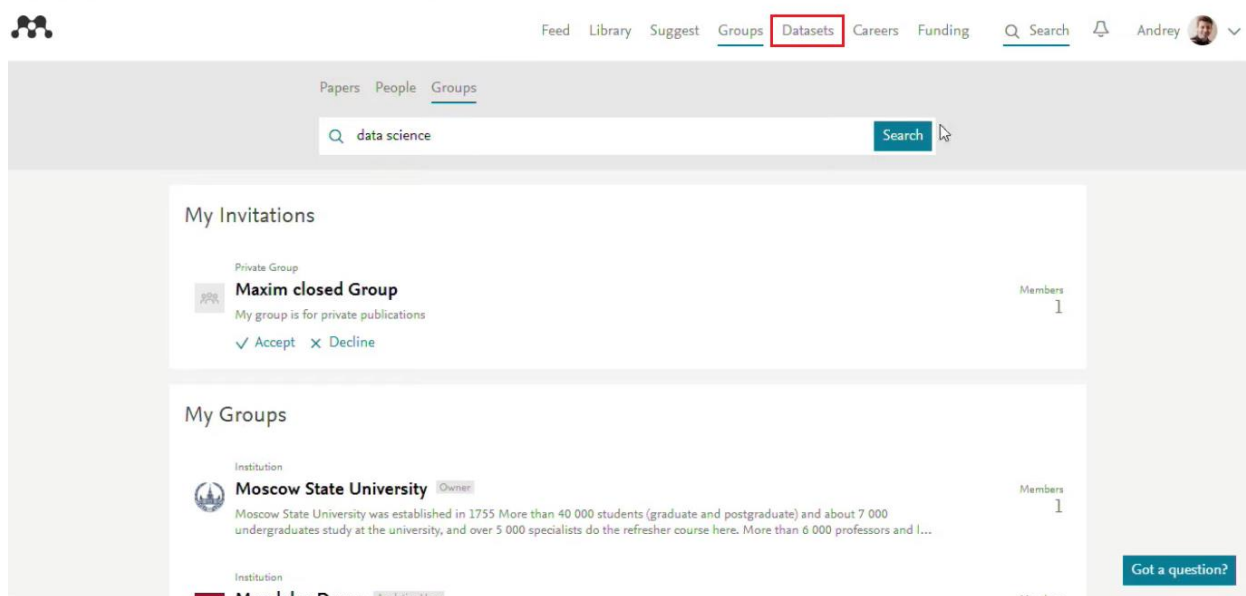
Figure 35.

What is *Mendeley Datasets*? This is a separate set of solutions for working with research data. I think that in the process of writing an article, you do not immediately have a scientific article. Surely, it is based on experimental data, or data already processed after experiments, techniques, program code, images, diagrams, graphs, tables, and so on. These appear earlier than the final article. Not all of what you have can be published due to volume restrictions. However, this is a very meaningful and important content. The *"Datasets"* section serves to post similar data and work with data posted by other researchers. Why would you post this? I think that in different popular science sources, you have come across news that researchers conducted a meta-analysis of a publication in some area and found out that two-thirds of the results or three-quarters of the results are not reproducible. This is quite a serious problem in research in general. The problem of reproducibility of scientific research is when we rely on certain conclusions previously

published, and now it turns out that these studies are not confirmed. One of the reasons why we cannot fully reproduce and fully confirm them is that we do not have enough data. We still have the conclusions of the article, but we do not have the initial experimental data on which they are based. We cannot change much in the research published in the 70s-80s or later. However, we can ensure the reproducibility of our own research results. How? By creating a foundation in the form of research data. If reader of your article who sees your conclusions in the study has a desire to check them, develop them, use them for some other purposes, he can get them not by writing you an email "please send me the data"but just by a simple link. That is what *Mendeley Dataset* is for.

In order to start working with this, we create new Datasets (Fig. 36).
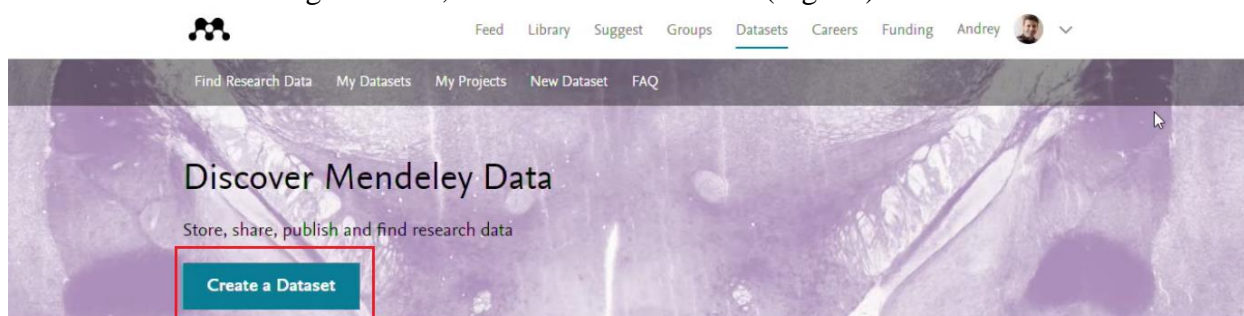
Figure 36.

As for me, I already have a certain number of Datasets. I created them. I entered a description section and attached the data (Fig. 37).
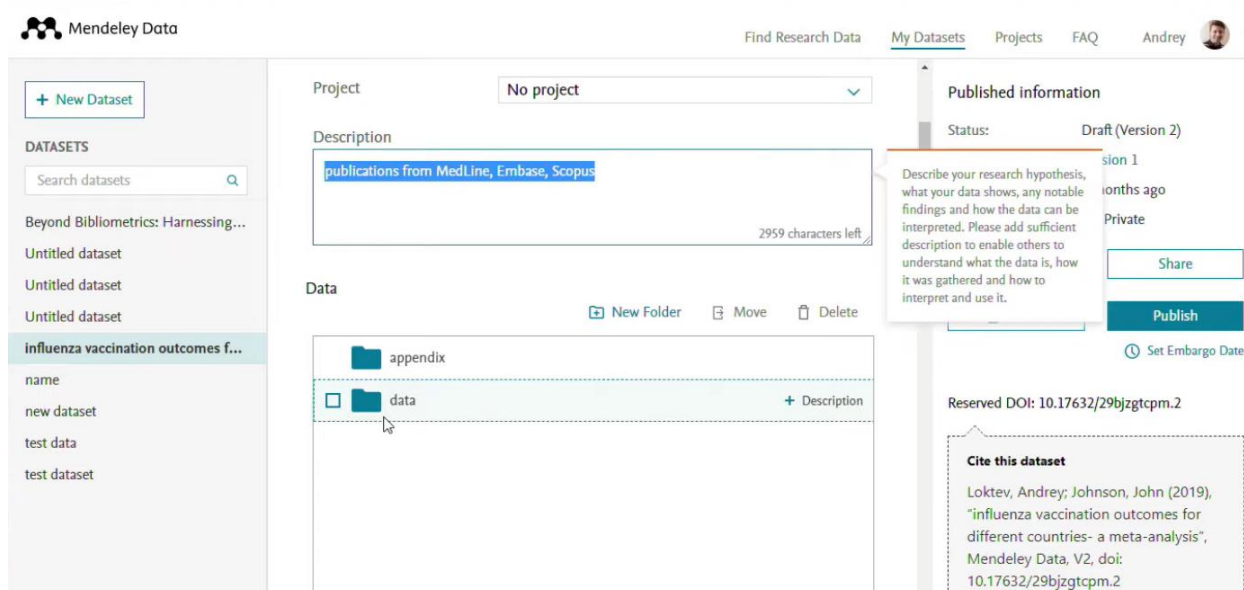
Figure 37.

This data can be absolutely anything, with the exception of articles, because articles are not data. It can be tabular data, images, program code, any data that you have up to 100 gigabytes on a *Dataset* that you can use. Quite a lot of space that you can use. At the initial creation of data, they are available only to you. The status of this data is specified as Private (Fig. 38).
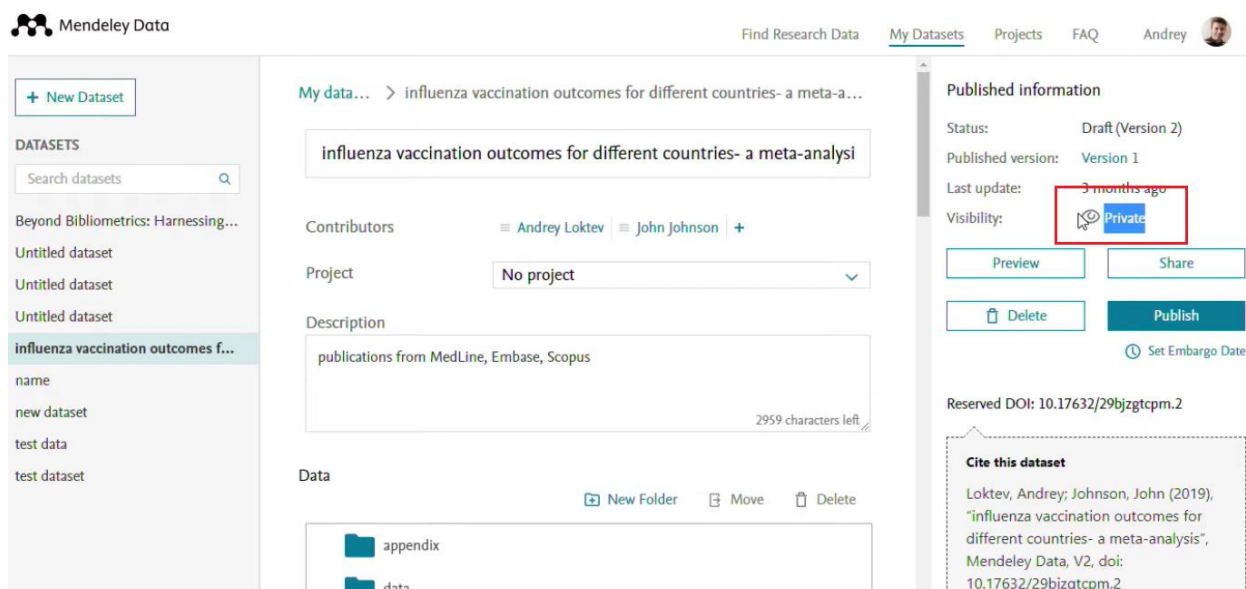
Figure 38.

It means that only you can see it. For this data, you immediately assign a DOI (Fig. 39).
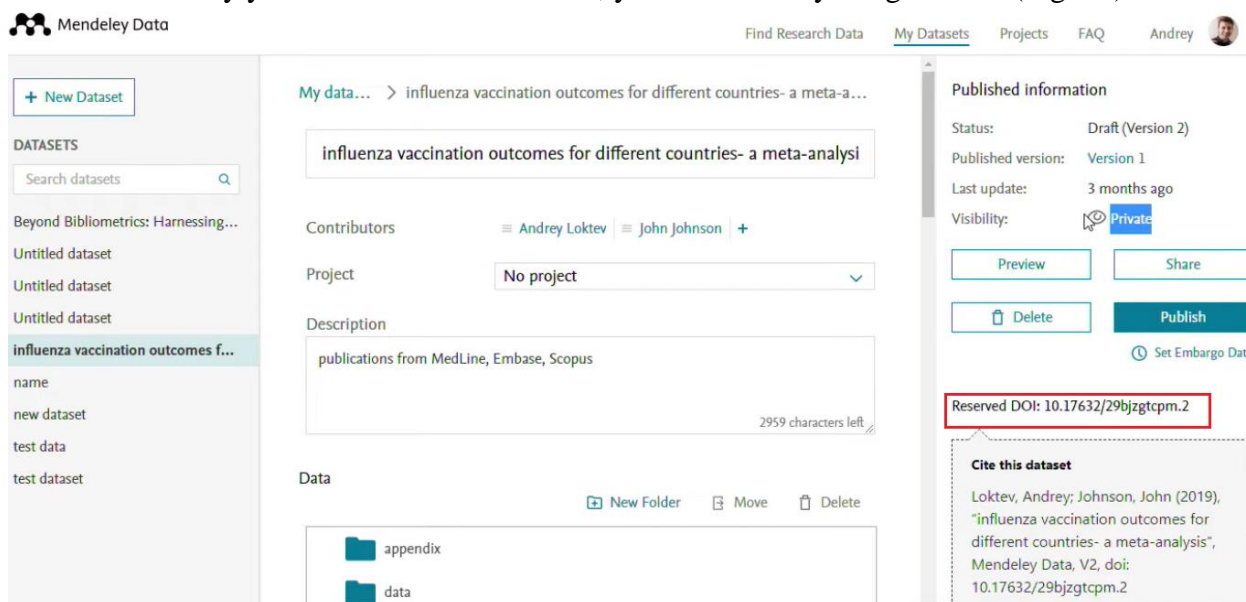
Figure 39.

DOI is the unique number by which this data can be accessed in the future. Many people are afraid to publish the research data before the article is published, because someone can steal it and publish the article before me. In fact, publishing data on the contrary protects you, because you do it earlier than the article will be published. And we have the data set fixed inside the DOI already at this moment. You are listed as a Mendeley user and the date when it is published is indicated. If in the future you have a conflict on the question "who did it first", then you can show that you have a set of data on this study published then and there, here is the confirmation. Moreover, by making this data public you decide on your own when you are going to do it. This usually happens when the article has already been published. Here you click *publish*, the DOI is already attached to your data and inside the article you can specify this link and any researcher will have the opportunity to go from your article to these research data and download it, get acquainted it them, etc.

Let us now see what it looks like for already published data. What are the opportunities? Mendeley Data allows you to publish data in the repository of Mendeley itself, but in fact, it collects data from a much wider list of sources for search. These are *Mendeley Data* and

ScienceDirect, and specialized databases for storing data like "Gene Expression Omnibus", institutional databases like "DataSpace Princeton", "Apollo Cambridge" (Fig. 40).
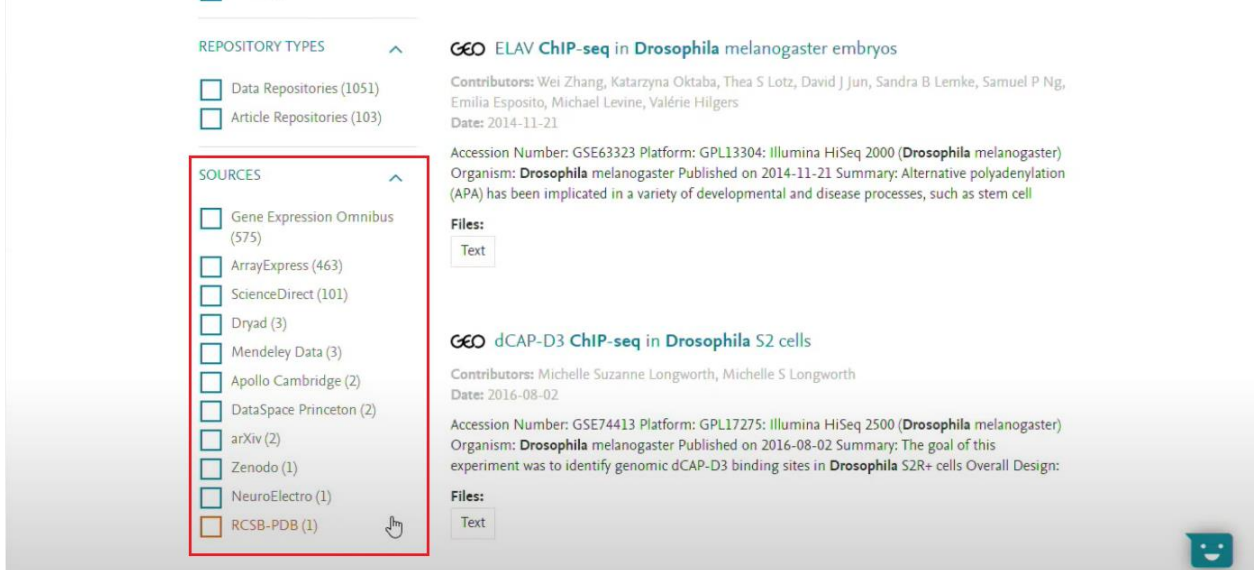
Figure 40.

It means that you get access to a much wider set of data when searching. For each type of data, there is an indication what kind of data it is. "Text", "File set", "Image", "Document", "Tabular Data", "Sequaning Data", "Software code", "Video" (Fig. 41).
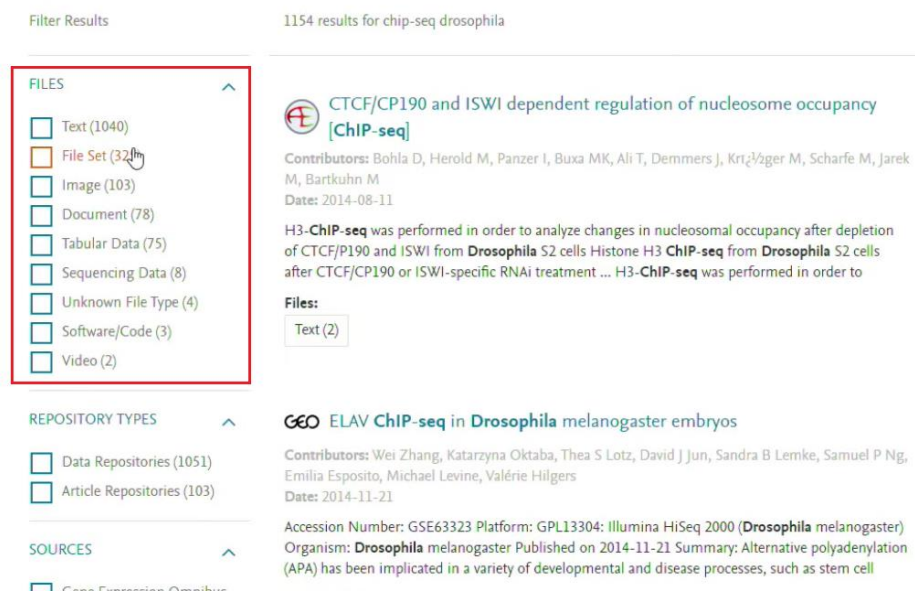
Figure 41.

We can filter it out. For example, we want to look only at the "Sequencing data" and investigate the necessary data. Here are the files that are attached. We can work with them (Fig. 42).
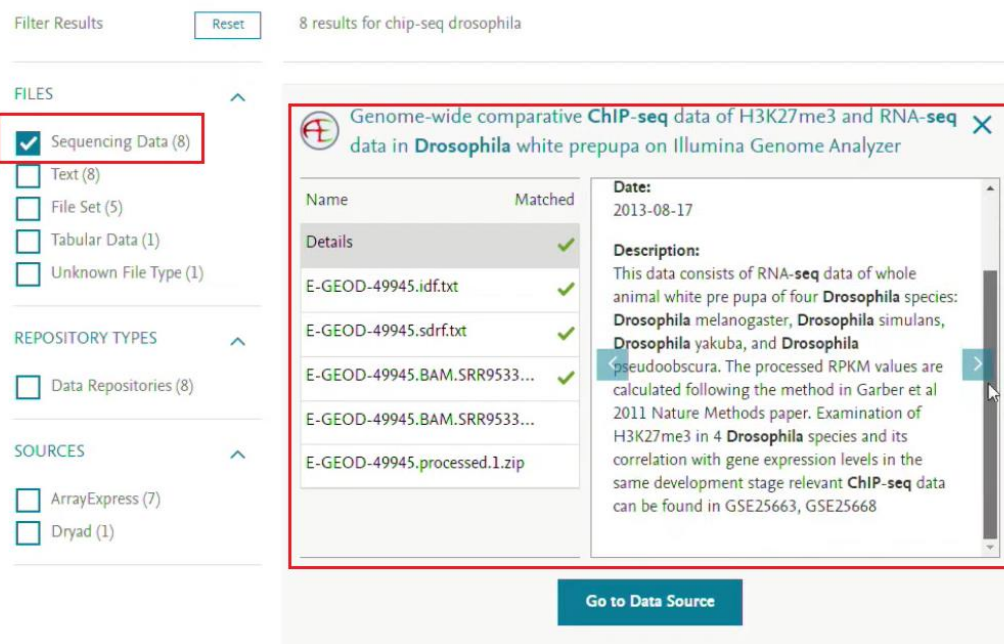
Figure 42.

Mendeley DataSearch indexes not only the description of the data, but also its content, if it is not an image or a video. Thus, it gives us much more search possibilities. If this is an external source, then we can go from Mendeley to the corresponding external source and download this data. Similarly, your data will be available if you have published it. If the data is specified in the article, tabular data in this case is immediately available, and we will be able to work with them. The link is established between the DOI of your data and the DOI of the article. This link can always be decrypted in the opposite way. In fact, in order to search for this data, you do not even have to go to Mendeley. You perhaps know, there is also such an opportunity in Scopus. For example, I did some kind of search when I saved documents in Mendeley. We found 567 documents. However, in addition, we found five objects of the type of research data (Fig. 43).
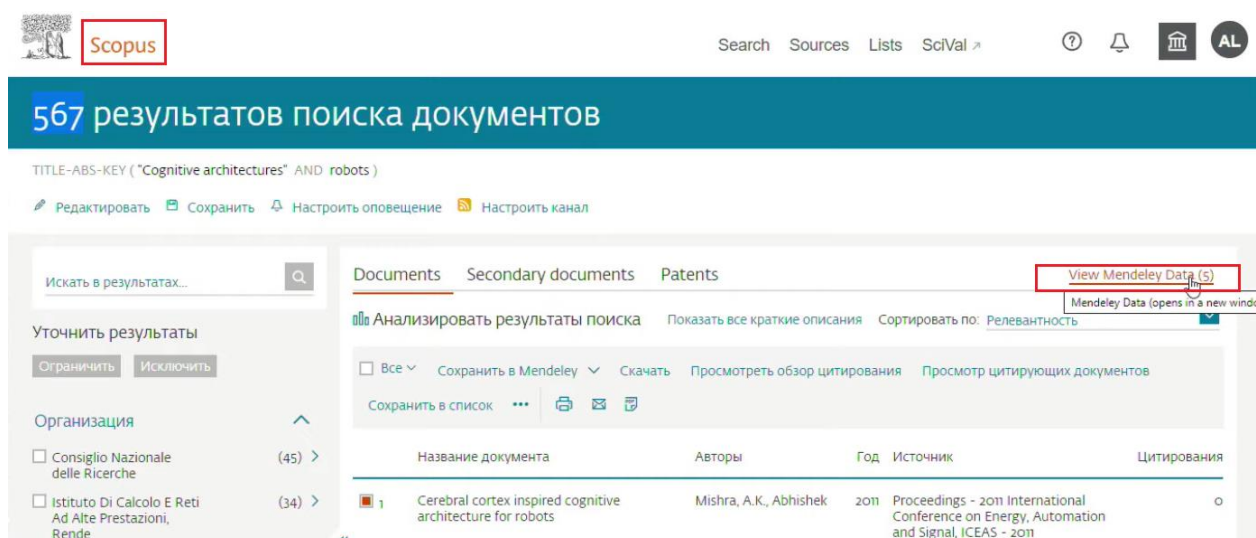
Figure 43.

Now you can always, by conducting any search in Scopus, look at both the list of scientific peer-reviewed articles and suitable research data that relate to this topic. They are all saved here. We will search by keywords, and we can work with them.

In fact, I recommend you to use it even if you are not preparing a publication with research data right now. This is a good data management tool that ensures data availability if you have some kind of diverse team, if researchers work in different institutions, if you do not know what will happen to the data after the team changes. Quite a common story. A researcher works in a team, he is engaged in some kind of task. Then he quits and takes another job. Where is the data with which he worked? Most likely, he left with it on a flash drive. This is not very healthy for the team as a whole, so this kind of Cloud storage is just one of the modern approaches to data management. This may not be so common in Russia now, but abroad it is an actively developing area, how research teams should store data so that they are as accessible as possible and not lost with various changes in project teams.

When you publish, the data will be useful not only for an individual article, but also for specialized journals that present the publication of data. For example, there is a ScienceDirect journal "Data in Brief", which publishes not scientific articles, but data. The data that you have obtained may be of interest not only to you, but also to other researchers. For example, you have conducted a clinical study on some disease. Then it may be interesting not only to you for some conclusions, but it may be interesting for some international clinical studies when clinical research data from different countries are combined. Therefore, you can publish it separately in the journal "Data in Brief" and separately as a research article (Fig. 44).
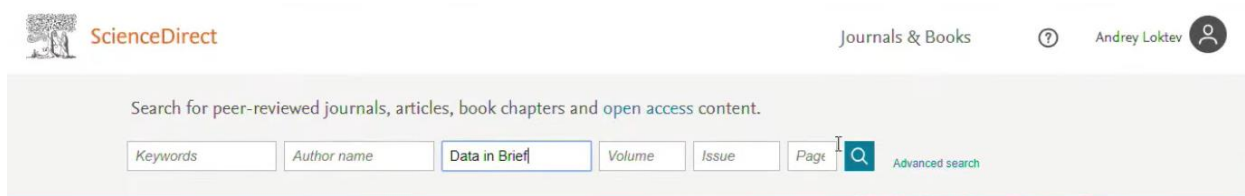
Figure 44.

Let us go back to Mendeley, we have 2 links left. The *"Careers"* link gives us access to the research job-hunting (Fig. 45).
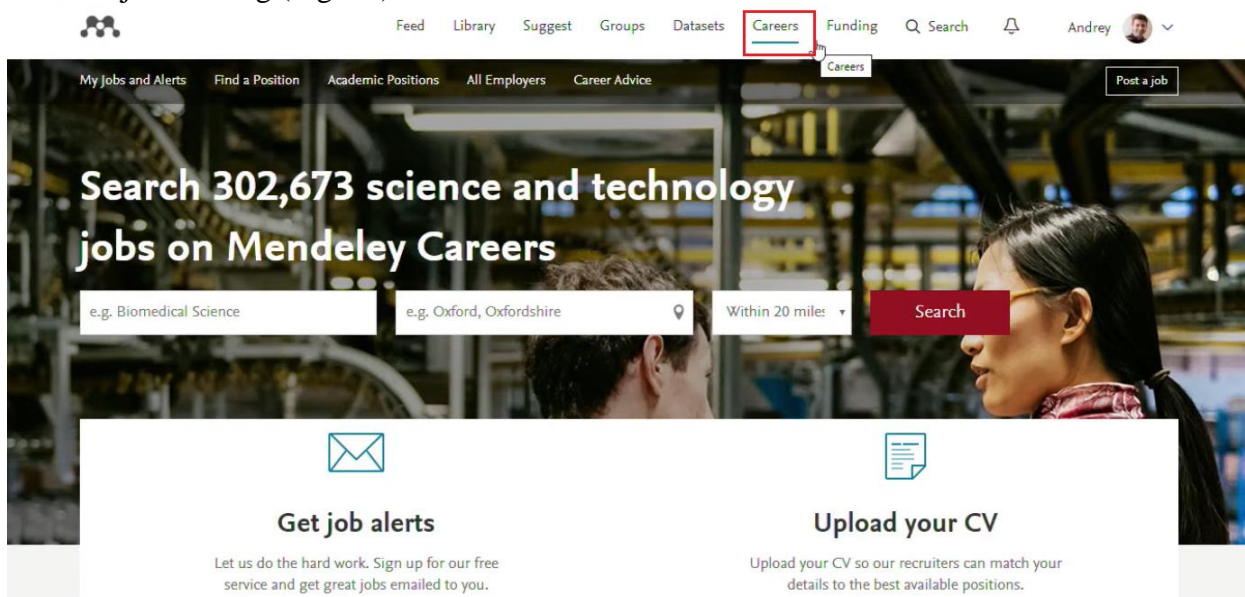
Figure 45.

Here Mendeley collected all the research vacancies that exist in the world by identifying those sources where they are from. They are mostly published separately on the websites of individual institutions, research centers, universities, etc. They are available in one place here. You can define the research field and identify countries that you are interested in. You can see what opportunities there are in international institutions. There are different options here. There are temporary contracts, internships, etc. You can get the idea of what opportunities there are for you within your research field.

The last section deals with financing opportunities. In addition to the financial opportunities offered by the Russian grant-givers, the researcher is able to participate in a huge number of international competitions. In the *"Mendeley Funding"* section, all the research opportunities from around the world in a variety of fields have been collected (Fig. 46).
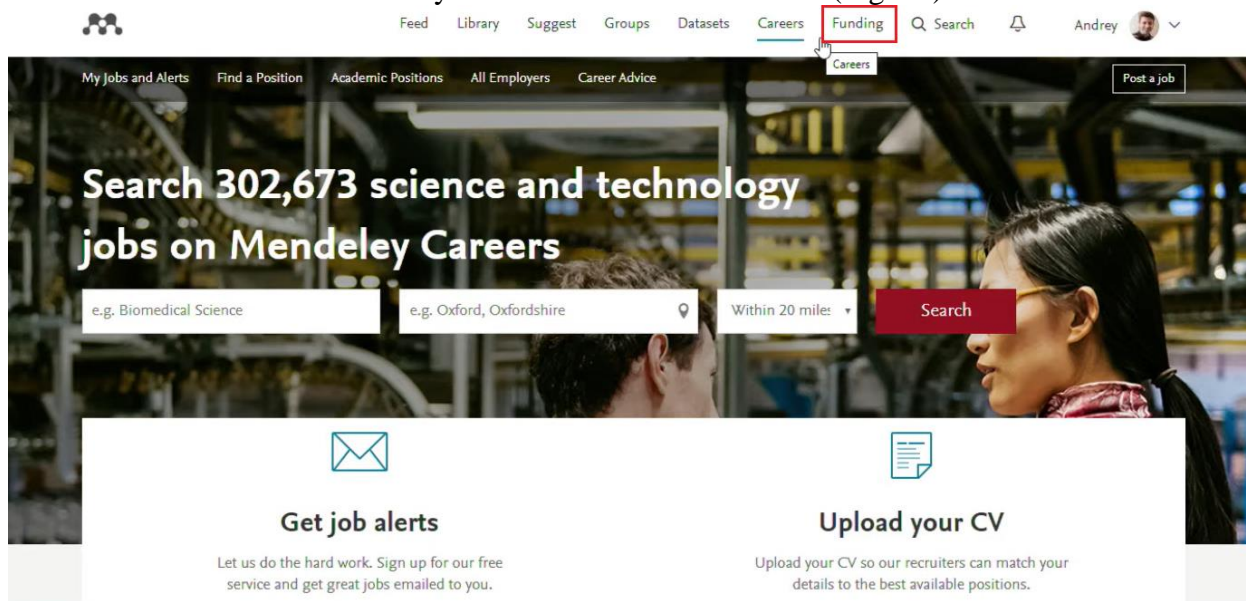
Figure 46.

If we do a research area search with you right now, we will see 2800 different grant support opportunities available in medicine.

Moreover, by grant support I mean not necessarily initiative research grants. Here the format of support can be very different. These may be some contests, programs, projects. There can be travel grants. It can be all kinds of training options, fellowships and scholarships, etc.
For example, we choose "Early Career and New Faculty Researcher". It turns out that out of 2800 there are 1100 different possibilities where young researchers can try their luck in the framework of medicine. Accordingly, for each grant, Mendeley tries to extract information from the Grantee's websites. It is not everywhere in full due to the fact that it is not presented in the original source. However, if there is such information, Mendeley informs you on the amount of the grant, deadline, subject description, who can submit, where to write, how to apply. Many grant-givers do not provide information about which country's citizens can apply. Therefore, we believe that if no restrictions are specified, then everyone can apply. You can save your searches. You can put a notification on certain applications that interest you. If any data changes or if the deadline for the application is approaching, the system will automatically notify you. You can always go to the original source, study it in more detail, or you can write an email.

As you see, Mendeley is a whole family of solutions, although initially there was only a reference manager, which after overgrown with a social network, group work opportunities, and opportunities to work with research data and search for vacancies in the scientific field and

research funding. Therefore, I recommend you to try, investigate, and register in the system to see what opportunities there are there for you.

Another question to comment on is whether we register in the system using the university's mail or it is possible to use our own. As has been mentioned, for Mendeley it makes no difference. Since Mendeley is not part of the subscription, it works fine with any mail. Another thing is that in Elsevier, you will have one account and it is easier to get access to Scopus and ScienceDirect from the institutional mail. If you already have a profile assigned to some email in, for example, Scopus and ScienceDirect, then I recommend you to use that one. It is the best strategy because when we save data from Scopus to Mendeley, in order for all this to work correctly, we should be both there and there under the same username and password.

Sometimes researchers have difficulty using their Scopus password when working with other services. I recommend trying to reset it, because the authorization system is the same and we access the same database. Another point to emphasize is if you already have a user account in Scopus, you can also log in to Mendeley with it.

Finally, let me briefly explain what researchers are supposed to do if they want to send an article to the international journal. If you want to send your article to the international journal, then in any case you send it using the publishing system of the journal that you have chosen. In this case, Mendeley helps you exclusively with the design of the full text, with the design of links according to the standards of this journal. The application form, which is required to be filled out by the publishers or the journal, is their prerogative.

Systematic reviews and meta-analysis

After Daniil Munblit, Associate Professor, Department of Children's Infectious Diseases, Sechenov University, Lecturer, Imperial College, London, UK.

I would like to start with the difference between a regular review and a systematic review because it is one of the frequently asked questions that arise when I communicate with colleagues or students. Let us start with a standard figure that you have seen many times in different presentations (Fig. 1 and Table 1). Figure 1 shows the pyramid of evidence. At the bottom there are case reports, individual cases or series of cases, then, moving upwards, there is a higher level of evidence - cohort studies, randomized studies. The results of these studies typically form the basis of domestic and international guidelines.
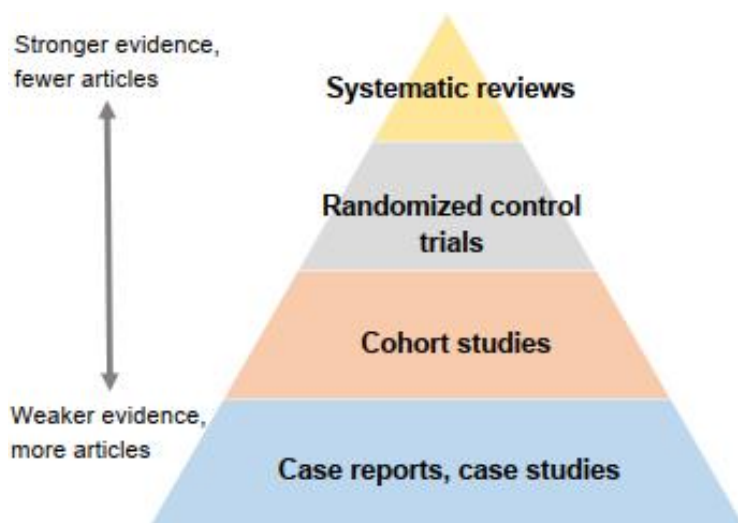
Figure 1. The pyramid of evidence (Kysh, 2013).

	Systematic Review	Literature Review
Definition	High-level overview of primary research on a focused question that identifies, selects, synthesizes, and appraises all high quality research evidence relevant to that question.	Qualitatively summarizes evidence on a topic using informal or subjective methods to collect and interpret studies.
Goals	Answer a focused clinical question Eliminate bias	Provide summary or overview of topic
Question	Clearly defined and answerable clinical question Recommend using PICO as a guide	Can be a general topic or a specific question
Components	Pre-specified eligibility criteria Systematic search strategy Assessment of the validity of findings Interpretation and presentation of results Reference list	Introduction Methods Discussion Conclusion Reference list
Number of Authors	Three or more	One or more
Timeline	Months to years Average eighteen months	Weeks to months
Requirements	Thorough knowledge of topic Perform searches of all relevant databases Statistical analysis resources (for meta-analysis)	Understanding of topic Perform searches of one or more databases
Value	Connects practicing clinicians to high quality evidence Supports evidence-based practice	Provides summary of literature on a topic

Table 1. Main differences between systematic and literature reviews (Kysh, 2013).

How do we write a review? We want to convey to the reader some information about the topic. We want to enlighten him, we write a review article, and we tell him about some nosology. It is possible for a group of diseases, some new treatment, etc. The classical review article is written based on the standard rules (Table 1). Discussing our example, we will focus on etiology, pathogenesis, common diseases. In other words, if we are talking about the disease, its diagnosis, and treatment - it is a classical review. When we do a systematic review, we should initially set the criteria. In any study, there should be the inclusion and exclusion criteria. We have to create certain search algorithms in order to make sure that we have found all the articles or sources that exist today or at least that we have tried to cover the maximum information available. Evaluation of the quality of the results, the validity of their interpretation, presentation of the results, these features make the systematic review an original study.

There is a question of the number of authors. Usually, you can write a review article yourself, you can sit in a cafe, choose a topic that interests you, and write a review article all by yourself. However, a systematic review is never done by a single author. Usually it is a team of three or more authors. Typically, it takes about 18 months to write a systematic review and publish it. This is a long process and again, one of the requirements is a detailed, thorough knowledge of a specific area.

The main goals. We are trying to answer some question, and possibly influence the existing clinical practice. There are a lot of different types of review articles. Let us look at some journals inviting the authors to publish. For example, you are invited to submit a paper, you may be asked to write

a state-of-the-art review, or you may be asked to write a comprehensive review, or you may decide to write a systematic review article. If you want to get acquainted with all kinds of reviews, there is a review by Grant M.J., Booth A., et al., 2009, giving you an idea of what is currently generally accepted in medicine. I strongly recommend you to study this.

How does a systematic review begin? It begins, like any original research, with stating of the objectives. The goal can be whatever you choose to analyze. For example - you can go to Cochrane collaboration website, and you will see that most of the Cochrane studies are based on randomized clinical trials. This is usually an assessment of the effectiveness of a drug. You can do a systematic review on a wide range of topics. Drug effectiveness evaluation is an example. Evaluation of effectiveness, again in Cochrane systematic reviews and meta-analyses is an assessment of drug effectiveness. That is, you are trying to accumulate all the information that is available in the world, look at all the studies that have been conducted where this drug has been compared with a placebo, and evaluate whether it is effective or not. Or it is possible to compare two groups of drugs, or compare the effect of some intervention. It can be anything: probiotics, polyunsaturated fatty acids, fish oil, etc.

The assessment of economic efficiency is a very common topic of systematic reviews or meta-analyses. When people try to evaluate some kind of an intervention proposed, they want to know if it is effective from the economic perspective, and if putting it into practice makes sense. You see, extremely pressing issues are being raised. That is, we are trying to find the answer to some question that interests the healthcare system, doctors, researchers, and finally, the patients. Again, we are not trying to review the topic. We are trying to get an answer to the questions about the prevalence of the disease, some epidemiological data, the accuracy of diagnostic tests, etc. Other questions may be if a specific test works or how useful it is in the diagnosis of a particular disease.

Some doctors tend to focus on the information that may be outdated. They have been practicing for 20, 30, 40 years. They got used to some approach that seems familiar and correct but in fact, it may no longer be accurate as it used to be. It is the systematic review that can give the most updated information to the practicing doctor. The systematic review can focus on anything, for example, on the methodology. This is needed when analyzing biomaterials or microbiome. I will give an example. There is a diagnostic systematic review published by BMJ (British Medical Journal) that evaluates PSA (Prostate-Specific Antigen) in prostate cancer screening (Ilic et al., 2018). It answers an extremely important clinically targeted question if it makes sense to use PSA in prostate cancer screening.

Another example. The systematic review can focus the prevalence of comorbidities. There are systematic reviews of comorbidity - how often patients with asthma have reflux and how often patients with reflux have asthma. And a classical example of a typical systematic review that we often come across is the analysis of the effectiveness of using a specific drug, let us say, of the proton pump inhibitors in the treatment of asthma in adults (Chan et al., 2011).

Before doing a systematic review, however, we should decide what we want to study. Like in any original research, we pose a question. In order to raise the question we do not need to reinvent the wheel, everything was invented earlier. I recommend you to apply the well-known abbreviation, PICO as a guiding tool. The PICO tool **focuses on the Population, Intervention, Comparison and Outcomes of a (usually quantitative) article**. It is commonly used to identify components of clinical evidence for systematic reviews in evidence-based medicine and is endorsed by the Cochrane

Collaboration. Thus, **"P"** stands for participants and/or population, that is, it means the group we want to study. It may be adults, children or children aged 0 to 12 months who live in the Moscow district of Khamovniki or children of a particular age who go to a particular school. In other words, we have to decide who exactly we want to study. **"I"**- stands for interventions. Do we want to study the effect of vitamin D? Proton pump inhibitors? A calcium channel blocker? Probiotics? It maybe some kind of an intervention or some kind of an influence, or some kind of an impact on the population group chosen. **"C"** stands for comparison, that is, what we want to compare. Do we want to compare the drug effect with a placebo? Do we want to compare two groups of drugs? **"O"** stands for the outcome. That is, the clinical outcome. It may be asthma, myocardial infarction, GERD, etc. There is a long list of what we can study. That is, at the beginning, before we begin our original research, in this case, a systematic review, we need to set a task, what exactly we want to do. Sometimes **"S"** is also added to this abbreviation, which stands for a study type. When we focus on some specific type of research, we often choose randomized trials.

I would like to comment on PICO by giving you an example. The one I have already cited. The effectiveness of proton pump inhibitors in the treatment of asthma in adults (Chan et al., 2011). What is our Population here? Who do we study? The answer is adults; we study adults. Then the Intervention follows. What is the intervention in my example? The use of proton pump inhibitors. What do we Compare in this case? It is not specified. It is included in the systematic review itself. Commonly it is comparison against a placebo. That is, the proton pump inhibitor effect compared with a placebo in the treatment of asthma is our Outcome.

I will give you another example. The effect of breakfast on weight and energy intake: systematic review and meta-analysis of randomized controlled trials (Sievert et al., 2019). Breakfast is our intervention. There is no population here because it is not specified. There is no focus on either adults or children. If the population is not mentioned then most likely, it is about adults and children. Here a type if study is added, namely, a randomized study. A randomized, controlled trial.

Before beginning this study, just like in any study, we pose a question. Do we want to evaluate their intervention effectiveness? Compare from existing practice or with a placebo or with something else in the treatment. As it is a disease in children or in adults and we assume we want to take only randomized trials. But you can set this task the way you want, depending on what your needs are. What exactly? What question do you want to put? What answer do you want to get? As you understand, it makes sense to start a systematic review on those issues that are either unclear, not investigated yet or on the issues to which there are conflicting opinions. One group of experts says "yes, let us use proton pump inhibitors in children with asthma", others say "no, it is not necessary, it is absolutely useless". And then, in order to get some informed decision, you need to study everything that is available today on this issue. To study and inform about the colleagues, the expert community, who write recommendation documents, and they can make some decision based on this.

After we have posed a question – to which we want to get an answer, then we must draw up and register a protocol. Why do we do this? Why do we write a protocol? First, we write it for ourselves to know what we are doing, to remember the order of steps to be taken. Second, we write a protocol for others. Because then people can look at this protocol and compare it with what we did and say "Wait guys, that is not what you wanted to do at all, you evaluate completely different things, you

cannot do that, it is not correct, you probably falsify the data." An important point is that we register it online. It is a good way to inform our colleagues that we are already doing the study.

Why is it important? As you know, in the scientific world it very often happens that ideas may simultaneously come to minds of a number of people in different countries. And the most unpleasant thing that can happen to you when you are working on some project, doing original research in the laboratory, or a systematic review is not to be informed about it. You have this idea in mind, you have been collecting data for a long time and making conclusions, and after a year or so you see that someone has just published an article on your research subject in some very prestigious journal. And you understand that you need to radically change your research because this study has already been done and the results have been published. This is not just an abstract example. I am telling you this from my own experience. My colleagues from London and myself did a systematic review devoted to asthma models. About a year later, a systematic review was published on this theme in the journal of Lancet Respiratory Medicine. It was clear that we would have to change the focus, which is very difficult in the process of doing things.

There is a resource called "PROSPERO" which is a register of systematic reviews (Fig. 2).
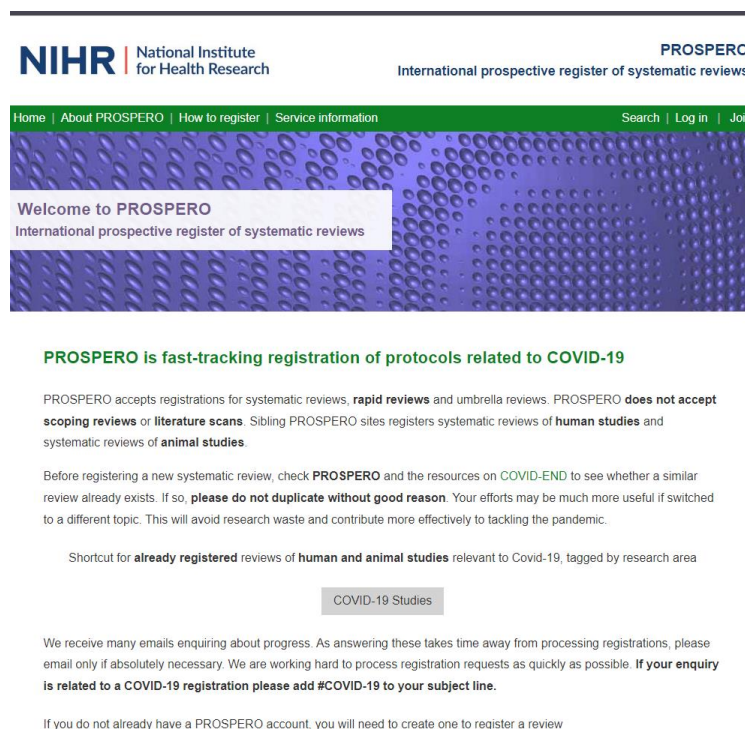
Figure 2. PROSPERO – main page. https://www.crd.york.ac.uk/prospero/

Using this resource you can find systematic reviews by keywords. It shows systematic reviews published and on-going ones. Not to make mistakes, not to miss anything, you should see what the researchers are currently doing, what goals they set. There are protocols, there are more detailed ones, and there are less detailed ones. Of course, you can just register your protocol. But before registering the protocol, the first thing to do is to see if someone is already doing the study planned by you. In other words, if you have an idea, you first of all should check if someone has already done it. A huge number of articles are published nowadays. It is just impossible to keep track of everything. You should look for a systematic review on your research idea. You may look on "Google" to see if there is a systematic review on the theme, or you check it in PROSPERO.

There is also the "Cochrane Collaboration", a great search engine. It is also possible to search through the "Pubmed" system. It is very important to do this before you start your own research not to waste your time and efforts. There is always a risk that you discover that someone has already done that. My recommendation is try to avoid it.

Next, the most reasonable thing to do is the so-called scoping search. Scoping searches are fairly brief searches of existing literature designed to help you gain an overview of the range and depth of research that exists for a particular research idea. It can cover published work and discover on-going studies. In other words, it is a preliminary search in order to more clearly set goals in the protocol, to determine the inclusion and exclusion criteria, or keywords.

Let us discuss your steps while working with the "Pubmed" database, as an example. First, conduct a superficial search for the keywords that relate to the idea you have in mind. But you still need more information not to miss something important or something very recent. It helps to have a clearer idea of what goals and, perhaps, keywords should be included in your protocol. You may find out that approaches are changing and the researchers are using different terminology or synonyms. This will allow you to more clearly outline everything you need in the protocol in order to start a systematic review.

Another recommendation of mine is to visit the "Equator" network website (Fig. 3).
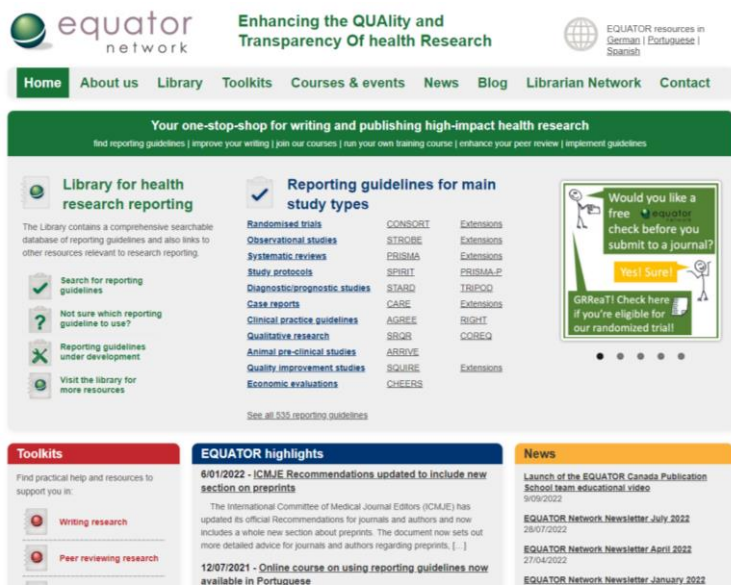
Figure 3. Equator network – start page. https://www.equator-network.org/

Before you start your work, you go to this web-site where you can find an excellent categorization by type of research. There are different recommended approaches to different types of research. If we conduct randomized trials, we should follow the recommendations of the CONSORT. *CONSORT* stands for **Con**solidated **S**tandards **of** **R**eporting **T**rials and encompasses various initiatives developed by the *CONSORT* Group. If it is an observational study you are referred to the STROBE. STROBE stands for an international, collaborative initiative of epidemiologists, methodologists, statisticians, researchers and journal editors involved in the conduct and dissemination of observational studies, with the common aim of STrengthening the Reporting of OBservational studies in Epidemiology. Since we are doing a systematic review, use PRISMA. *PRISMA* primarily focuses on the reporting of reviews evaluating the effects of interventions, but can also be used as a basis for reporting systematic reviews. For example, the PRISMA2020 statement is an updated guideline for reporting systematic reviews.

If you follow international recommendations for a particular type of research, the probability that your article will be accepted for consideration and possibly published increases dramatically. Because it shows that you followed certain generally accepted protocols. In the case of systematic reviews, the recommendations of PRISMA are applicable. We can go in and take a look at the PRISMA checklist (Fig.4).

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

Figure 4. Prisma checklist. http://www.prisma-statement.org/

As you see, it has all the information we need and there are various recommendations. There is a Russian PRISMA checklist as well. If you do not have a good command of English, you can download it in Russian. The PRISMA checklist is, in fact, an instruction on how to conduct a systematic review and if you follow the checklist, it is very unlikely that you will miss any important aspects and most likely you will do everything right. In the checklist, there is a point "is the protocol registered on Prospero?". Here you should add the protocol number and then refer to it everywhere. Since there is a clear algorithm for doing a systematic review, editors or reviewers will not have any questions about the content, novelty, or correctness of the methodology.

However, we can use another method. You already know what PRISMA is. Go to the web-site (there are transitions to "Equator network" and "Prospero") and study the preferred way of writing structured systematic reviews and meta-analysis. Everything is here, everything is very clear. In addition, I would like to recommend you to visit the website of leading journals (BMG, Lancet, PLOS Medicine, etc.) and find there very good, clear recommendations on how to write correctly, how to format correctly, how to properly carry out a systematic review and meta-analysis. The Lancet regularly publishes systematic reviews.

It is important to check in advance what the journal of interest publishes and what the requirements and recommendations for authors are. After all, typically you have a provisional idea of which

journal you want to send your work to. I can say about myself, I conduct research in the field of allergology and I know which journals are the main and most prestigious in allergology. Accordingly, you can have an idea in which journal you want to publish. When you finish your review, in six months, in a year or so, you will already have an idea where to send the work to, although the list of journals should be reviewed again. However, at the beginning of the work – do not be lazy, go and read the systematic reviews published in the journals in your field. Look at how they are written, what themes are covered, etc. It is very useful to draw up a protocol, register it and follow it step by step: define the goal, inclusion and exclusion criteria, etc.

The next stage is the search itself. You need to find, preferably, everything in the world that is on the theme chosen. Of course, the search is not always optimal and it does not fully reflect the picture. An example is the work of Bramer, W.M., Rethlefsen, M.L., et al., 2017 ((Bramer et al., 2017)). It shows how different the number of results is if we use one database or a mixture of several. Of course, this is a difficult question, because many of the results are duplicated. If we take Cochrane collaboration, where many experienced researchers work engaged in systematic reviews, they do a very thorough search in a large number of databases. But when you think about which databases to use - in addition to such a scientific approach you also need to be rational. Ask yourself the question: "How many articles do you expect to come out? 1000? 5000? 25000?" If you know that a lot of articles have been published on the theme, the search through 5 databases will show you a huge number of titles. It is worth thinking about – do you have the resources for processing? If you don't have enough resources, you will never do a systematic review ((Bramer et al., 2017). Do not forget that there are always limitations in any study. Objective and subjective limitations. You can always write: "unfortunately, we did not search in the ... databases, due to the abundance of data on the theme".

Let us say, we looked through the databases, saved the works that are of interest to us. Next, we need to screen what we have found and pull out the data. Please note that we follow the PRISMA algorithm. The first step is data collection – everything that you have found in the databases, 1700 items, for example. Some of them are duplicated. Remove duplicates. Then you need to view the remaining titles by title and summary (title' and abstract' screening) – remove unnecessary. I will share with you my own experience as an example. My colleagues and I started the review and we had 1,700 input titles. Then, during the screening, we read 43 full-text works and only 37 met all our criteria. Of course, you can see reviews where initially there were 2000, 3000, 5000 titles, and in the end, there were 30 or 20 that fit the inclusion criteria that you have defined. Of course, it depends on the specific theme. Sometimes the criteria should be made a little less strict and as a result you will have more articles at the output and more material to analyze.

I would like to emphasize that there are other programs as well. For example, "Rayyan" or "Covidence" (Fig. 5).
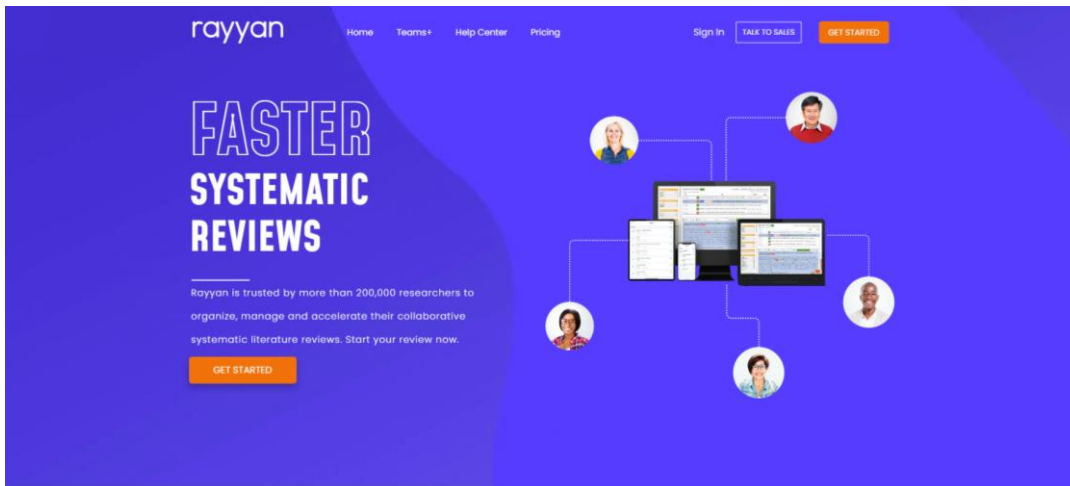
Figure 5. Rayyan start page. https://www.rayyan.ai/

There you can upload titles and summaries of works, select keywords, inclusion and exclusion criteria. This greatly facilitates the process. However, I want to point out that one person cannot do a systematic review. One person gets tired, has his own beliefs about the theme investigated, may miss something, etc. Therefore, it is imperative that two researchers do the screening independently of each other. This reduces the likelihood of error and the likelihood of bias.

Next, we go through the sieve stage, we selected a certain number of articles that could potentially form the basis of our review. Now we need to study full–text versions of the articles It is convenient to use the "Covidence" program. You can upload a pdf file of each article using it (Fig. 6).
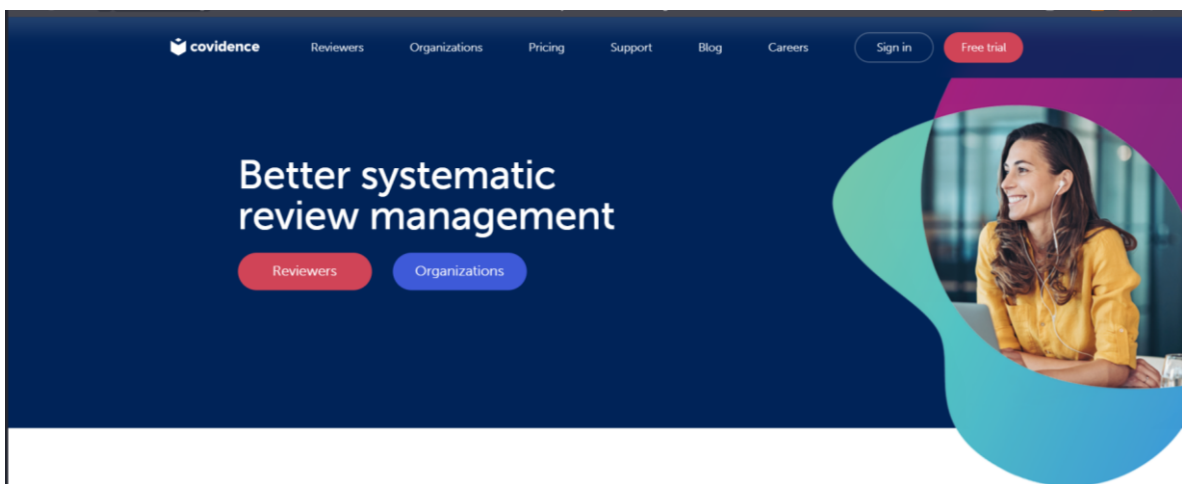
Figure 6. Covidence start page. https://www.covidence.org/

After studying the full-text versions of the works, we proceed to the extraction of relevant data. Such information depends on what questions you have set for yourself. In order not to miss anything, it is recommended to use the data extraction form offered by the Cochrane collaboration. However, most often we use Exel – we translate this form and modify it to meet the needs of our review. The most acceptable option is that you and your colleagues independently begin to fill out this form with the data you found. This allows you to compare the results. It is important because it may well be that you or your colleagues have overlooked something or considered it unimportant.

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After that, we need to assess the risk of bias. There are many bias types. For example: selection and allocation bias (incorrect population choice for the study or incorrect randomization, etc.); confounding bias (various additional factors affecting the population); attrition bias (or exclusion bias is a kind of selection bias caused by attrition of subjects for different reasons which results in a small part of patients completing the study, reaching the final stage); outcomes measurement bias (how the outcome was evaluated); publication bias (the failure to publish the results of a study on the basis of the direction or strength of the study findings), etc. Today there are many scales for assessing the risk of bias, for example, Cochrane collaboration risk of bias 2.0 (Fig. 7). It is important that the risk of bias is evaluated by the most experienced employee, as this process requires an in-depth understanding of clinical epidemiology, although today there are a large number of training materials (including online). Which means that anyone can learn how to do it.
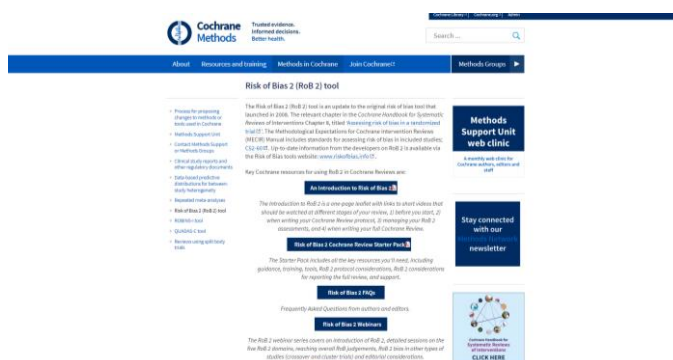
Figure 7. Cochrane collaboration risk of bias 2.0 installed page https://methods.cochrane.org/risk-bias-2

An example of the publication bias is one of the most cited articles, Turner E.H., Matthews A.M., et al., 2008 and Page M.J., McKenzie J.E., et al., 2018 (Page et al., 2018; Turner et al., 2008). The authors of the study used the Freedom of Information Act and requested all information on antidepressants from the FDA (i.e. did not use the database search). Among all published works, 97% say that antidepressants work creating the illusion of choosing drugs. However, if all unpublished works are added, the conclusion will be different. Of course, it is not in the interests of pharmaceutical companies. When a representative of a pharmaceutical company, especially of a high level, tries to tell you how effective their drug is you often have to clearly explain to him why it is not the fact. To see if there are any unpublished clinical results, you need to use the register of clinical trials – ClinicalTrials.gov (https://clinicaltrials.gov/) or the WHO register.

It is important to know that there is an excellent bias catalog developed at the University of Oxford. It was developed in the School of Evidence-Based Medicine. You can find a lot of interesting information with excellent examples.

As for the outcomes measurement bias, there is an association of Core Outcomes initiative, which unites researchers who are engaged in the developing the sets of key outcomes. It all started with the OMERACT collaboration. OMERACT is the acronym for an international, informally organized network initiated in 1992 aimed at improving outcome measurement in rheumatology. The doctors wondered, what exactly we focus on when evaluating the effectiveness of the drug; what exactly we evaluate and how to measure the outcome. Doctors

from the academic environment most often think that they know what to believe in and what the patients care about. But in fact, you need to ask the patients themselves. OMERACT was one of the first who invited patients and representatives of the industry, the ministry, and the clinicians to discuss what interests the patients with rheumatoid arthritis, and what should be considered to be the correct outcomes in clinical trials for rheumatoid arthritis. The conversations with patients showed that they are most concerned about what needs to be evaluated within the framework of research. Doctors were very surprised to hear "fatigue" instead of "stiffness and pain syndrome". In fact, the effectiveness of the drug in relation to fatigue had never been measured. OMERACT continued developing in that direction. But other initiatives began to appear, such as HOME, Core Outcomes Set Initiative (CS-COUSIN) - Cochrane Skin, or COMET initiative that brings together community data. It is always useful to know which works have been published and which groups and what they have been doing in this area.

In conclusion, I would like to recommend you to get acquainted with the main aspects of meta–analysis by reading the following source: Ried K., 2006 (https://pubmed.ncbi.nlm.nih.gov/16894442/). It is important to understand this because meta-analyses often appear on the slides at the scientific conference, and unfortunately, sometimes the results of these meta-analyses are not interpreted correctly.

There are resources that give an introduction to a systematic review and meta–analysis. A course on Coursera from Johns Hopkins University, for example. You can sign up and go to Oxford where the courses on systematic reviews are given for three or four days. There are other universities that give such courses.

Finally, I want to emphasize that a systematic review broadens the horizons of a researcher in many ways. Again, in order to conduct a systematic review you do not need anything but time, access to databases, and knowledge of its methodology.

In Conclusion: What you need is time management

*After **Andrey Zakharov-Kurch,** Academy of Top Management*

Time management is a well-known word combination. It is the process of planning and exercising conscious control of time spent on specific activities, especially to increase effectiveness, efficiency, and productivity. However, it does not actually reflect the essence of what this science really studies. Because time management is accounting, allocation, operational planning of one's own time resources. Thus, we will focus on time management as a scientific approach to the organization of time, increasing the effects of its use.

The motto of a professional time manager is "work less - do more". We should treat time as the resource. However, the question is what we call resources. Seneca, a Stoic philosopher of Ancient Rome, also studied the issues related to the use of time. He began to divide the time spent into good and bad, effective and useless. There is also the Eisenhower matrix and several other matrices (Fig. 1). If you are just beginning to practice time management, I recommend you to study this classical time management approach, and then you will understand that in any case it should be adapted specifically to your individual needs.

Figure 1. Eisenhower matrix for planning

Let us imagine how any company or any business works. First, there is some input information, e.g. we are to set a goal to do something by the deadline. After setting a goal, we have two options: either we can do it correctly and efficiently or we can do it poorly or not at all. Therefore, there is an entrance and there is always an exit, a positive beginning or a negative outcome. That is, we always do something based on certain criteria.

We all live in some country where there are certain laws. This controlling influence is external. There are laws of the market, there are bosses, and this is an internal controlling influence, which tells you to do it by a certain deadline. Without a controlling influence, it is almost impossible to achieve high quality results. The controlling influence gives you the criteria for the work that you have done. That is, if you did it right or wrong, on time or not on time, good or bad, in accordance with the regulations. Therefore, before proceeding to this or that action, it is important to determine the quality criteria for the work to be done. Now we will analyze the most important criterion of time management, which essentially forms the concept of success. What is success? Success means reaching a goal or accomplishing something you have set out to achieve. I would add that success is an opportunity to achieve a goal on time.

One of the key characteristics of a successful person is that he/she does everything on time. There are two components in doing things in/on time. The first one is our own plan to do something by some particular time. The second one is the controlling effect. It can be our manager or some other external influence. A very simple example could be a parent evaluating his/her child's success. The task set is to be at school at 10:00 am. If the child is at school at 10:00 am, he/she has successfully completed the task. If he/she is there at 10:05, 10:15, or later the task has not been not completed.

Success has two criteria: the first one is social, when we evaluate a person by his/her position in society, car, apartment, and we say - this is a successful person. However, in fact, the word "successful" originally came from the fact that everything is done on time. In order to be in time, you need to learn how to plan and planning is probably the most important tool in our life because planning is connected with the future. Future can happen either by itself or we can plan it with a higher degree of probability. Many businesspersons manage their companies situationally, chaotically, without proper planning. The main complaint from them is: "the market is not controlled; something is happening in this world, I have stopped making money, why?" The answer is because, in fact, they do not plan their future. For example, there is such a job as a realtor. At the time management seminar a realtor suddenly asks for the permission to leave and his excuse is rather valid: he has got a call from his client "with money" and it is very important to meet with him as soon as possible. But is it possible to adjust it somehow? Most people would say that it is impossible. In fact, almost 90-95% of our actions can be planned if we understand the principles and rules. However, planning is about following a set of rules. We will now discuss some of these rules and you will see easy it is to follow the rules and thus do things successfully.

Let us look at the most important factors. The first thing is human capital because part of the successful performance may depend on you, e.g. brushing your teeth in the morning, having

breakfast, etc. However, sometimes even having breakfast may not depend on you. So when you plan something, you should understand if the responsibility is totally yours or you are doing the business together with someone else. The second thing is MTT, which stands for **m**aterial and **t**echnical **t**ools. Because to do this or that action you often need tools. For example, it would be difficult to give a lecture without a computer. Many things you cannot do at all if you do not have the tools. Imagine a situation: I am going somewhere by taxi and my colleague says we urgently need to send a contract to our partner. How can I do this if I am in a taxi? It is clear I have a computer with me. So I open the laptop, there is no Wi-Fi network - I hook it to my phone - and send it. We did everything on time. Literally, it took us 15 minutes to win the tender. It turned out that those 15 minutes were extremely important. Now imagine that I do not have those material and technical means at hand. No mobile phone, no Wi-Fi, nothing. The outcome is evident and we will fail. The conclusion we could make is without MTT in many cases people would fail.

Money is one of the means for measuring our success. It is most easily recovered from all the resources. It is the fastest recoverable resource. Nowadays bloggers who just talk about themselves on YouTube can earn millions. That is, money is an easily restored resource; you just need to be in the right place at the right time.

The widely used word combination "time management" does not seem to a correct one. Time cannot be controlled. Time is just units. This is a scale and based on which you measure your actions. If we managed to do things in time, we are a success. If we did not, we failed and we are not a success. To call time the most powerful resource is not correct because resources can be recovered. Time is not restored. That is, we can restore human resources, monetary, logistical ones, but time is not restored. Therefore, time cannot be regarded as resource. It is well known that there are people with high IQ and people with low IQ. Which category of people do you think time management is typical of? Strangely enough, it is people with an average IQ who are trying to formalize their actions in time. If the IQ level is low, they do not need anything at all. They do not need time management because there is always a boss who tells them what to do and when. My recommendation to you is to remember about time as the main criterion of your success.

 Remember that intuitive planning, which many people use in life, is ineffective. Additionally, you should understand that it is impossible to plan everything. In time management, in no case can you plan 100% of your time. When we talk about time management, we should proceed from the fact that each of you has the so-called VC, coefficient of vitality, that is, the energy potential that is inherent in nature. You probably know that in the past the GDR Olympic team was recruited according to genetic principles. They examined the genome of each athlete, if they saw that there

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were certain genes, the athlete was enrolled to the Olympic team. It is necessary to clearly understand that the energy levels of each of us are different and therefore one can do in two hours what the other one will only start doing in these 2 hours. Therefore, you need to understand when using time management, when you plan, for example, the time of your team that planning is never done based on the fastest and best option, because it can make 10-20% of that. Everyone else will just collapse and will not be able to keep up the pace. You should not focuses on the weakest because then the average-weak ones will simply fail. How is VC determined? In most cases, it is defined as follows: you can remember some episodes in your life when you felt great, did a lot of things, everything worked out. Those episodes of your life show your normal level.

There are some coefficients that are used in time management, you probably heard there is EI, **e**motional **i**ntelligence - this is stress tolerance and it is also a key in time management. Stress tolerance is *the ability to be relaxed and composed when faced with difficulties*; *having positive stress tolerance is being able to stay calm without getting carried away by strong emotions of helplessness and hopelessness.* Stress tolerance the acceptance of an assessment of an event. For example, you did not succeed in something - a person with high emotional intelligence says, "that is OK, I will repeat and next time I will do better". Persons with low emotional intelligence in this situation get completely frustrated and keeps analyzing the failure finding faults with themselves. This is the wrong strategy. Because at this moment we are thinking bad about ourselves, and in fact, we demonstrate this negative self-evaluation to others. The higher the emotional intelligence, the easier it is for you to perceive the result of any action, because the result is formed during the action itself. If you do everything carelessly the result will be bad. People who do not take responsibility for their actions or are afraid of this responsibility are bound to failure. On the other hand, people with a high IQ in the team make it difficult for us to do the planning. When people have a very high IQ, they are too detailed and they cannot fulfil the plan quickly and accurately. Team members with a very low IQ are not needed at all. Therefore, the average IQ is, firstly, the level of managers, because probably 90-95% of managers do not have a high IQ. If they have a high IQ, they begin to doubt, they cannot directly manage, and they do not have enough determination for this, whereas people with a low IQ will never become managers.

When we study classical time management, we come across such an interesting recommendation: "it is recommended that you plan the next day at 18 o'clock on the previous day." Why is it 18:00 on the previous day? This sounds logical: the working day is over; you are planning the next one the day before. In fact, plans can be daily, weekly, monthly and annual, whatever you like. You can really plan for the next day. However, you should be aware about some interesting things. When planning things for the next day you tend to subconsciously assess your current energy state.

For example, if you are tired now and I will offer you to do some things tomorrow that require a lot of energy, you will have doubts you will be able to do it even if you have a free day. When have the feeling that there is not enough energy to do the job, you have some doubt whether it is worth doing it. We can conclude that you underestimate the chances of your gob to be done on the next day. An alternative option is when you tend to overestimate you energy resources. You are in a good mood in the evening and you start planning for tomorrow: I will do two, three, or five things during the working day. However, if your evening is busy, if you go to bed late and do not have enough rest at night, you won't be able to do anything really well tomorrow. Therefore, it is very important to do the planning in advance. However, it is also important to adjust the planned things regularly, because when you are in a very powerful energy state, you can do things literally in 20-30 minutes. However, if your energy drops sharply, then it may take you 2-3 hours do the same things and it is not yet the fact that you still do it to the end. Some managers believe that planning should be done in the morning. Because in the morning you may suddenly realize that you lack the strength and energy to perform the tasks planned yesterday. Therefore, for example in business, if you have a low energy level and you have an important meeting, it is better to cancel it because the probability that you will lose is very high.

In time management, it is very important to develop as many good useful habits and skills as possible. Habits and skills are important because you begin doing things automatically. When we do something consciously, that is, when we "turn on" our consciousness, we spend a huge amount of energy. If we translate some action into a skill, then we do it without any involvement of our mental energy. I mean many useful skills that "charge" a person, so to speak. It is like charging your phone's battery overnight.

The first thing you should do in the morning is diagnose yourself or your team members. In the morning, we often have a low energy level. That is, you do not have enough energy to do your job. That is at the beginning of your working day, everything should be positive and encouraging. It is recommended to discuss what has been planned for this particular day, how it will go, etc. You know that often people rely on a cup of coffee or something else to be more energetic. However, the best recommendation is physical activity.

If you do not have energy, you cannot plan anything. Therefore, you should understand that in order to manage time, you need to manage the energy of your own and that of your team. If you do not have enough energy, it is better not to get down to business at all. To help their staff members to become energetic, many modern companies have specially arranged large dark rooms with sofas, comfortable arm-chairs, etc. for the staff members to stay there for 15-20 minutes, take a nap, "reboot" their nervous system, relax a little and then go on with their work. There is

nothing to worry about if they leave their work places for some 20 minutes. Because labor productivity increases dramatically as a result.

Let us now move on to matters that are more pragmatic. Planning should start with rest. Why should you always start with rest? Your subconscious mind understands that if you work intensively for a week, you will have time to recover. If you have not planned the recovery time, your body will automatically switch to energy-saving mode. That is, if you do not have the vacation planned, your body does not know when it will recover and starts saving energy from the very beginning. Therefore, when planning, it is always necessary to guarantee rest.

It is not for nothing that the nation of logisticians, the Germans, created a famous proverb, which says, "war is war, but lunch (dinner) is on schedule." In many international companies, they do not support staff members who are used to working overtime. They may choose to fire those who cannot do their job during the working day or they may choose to bill electricity, water, heat supply, etc. to those who stay in the office after the working day to complete things that have not been done. It is a real example from my experience with Samsung here in Moscow. I believe it is a convincing example to support the conclusion that you have to do all the work before 18:00.

People have different biorhythms - we have physiological biorhythms, emotional and intellectual ones. Of course, when these three biorhythms coincide, you are at the peak of your shape. Why do I believe in these things? Because as an honored karate coach I know well that when we prepare our athletes for competitions, we take into account these cycles, we calculate and take into account the load cycles in advance. Our life is cyclical in everything and therefore we should be aware about these cycles if we want to be a success. If the system, your body, starts to work with wear and tear - who needs it?

I would like to emphasize that it is very important to have enough sleep. Body systems recover and become balanced and cleaned during sleep. Everyone has his or her own norm of optimal sleep duration. I had a period of 2 years when I used to sleep for 3 hours, but I always took two breaks during the day of about 20 minutes and it was enough. However, I did not feel any changes except for one thing - changes on my face. The face is a good diagnosis of the diseased condition. It shows your energy level well and I recommend you to look in the mirror more often. It helps you to understand if you are overworked or not.

It is common knowledge that there are phases of sleep, namely the phase of deep sleep and that of a superficial one. I recommend that you start tracking your sleep phases. Today you can download an application to your smartphone, turn it to the airplane mode and put it next to you. The application will track your sleep movements, breathing, and sleep phases. Moreover, your phone

will wake you up in the right phase of sleep. It is very important to wake up in the right phase to be energetic during the day. I constantly monitor my sleep phases with the help of a special bracelet. It ensures that I will wake up in the correct sleep phase. As a result, we develop the habit of getting up at the same time every morning. The time of getting up depends on only one factor, on the time when you go to bed. Thus, the first thing we begin to regulate is the time of going to bed; the second is trying to wake up in active phases. If for some reason, you cannot do that it is better not to go to bed at all.

Thus, time management starts with the simplest thing, i.e. with regular breaks. A break is a very important thing, because you need to recharge. You have to learn to alternate phases when you spend energy and recharge. Having a cup of tea or coffee guarantees you a break. Sorry to say, but often people tend to develop the habit of smoking because it guarantees them a break. Let us stress once again, organizing of just having regular breaks helps you to be a success at work.

The next thing I would like to discuss is the **Pomodoro technique**. This popular time management method recommends you to alternate focused work sessions with frequent short breaks to promote sustained concentration and stave off mental fatigue. The *Pomodoro Technique* was developed in the late 1980s by then university student Francesco Cirillo. He was struggling to focus on his studies and complete assignments. Feeling overwhelmed, he asked himself to commit to just 10 minutes of focused study time. Encouraged by the challenge, he found a tomato (*pomodoro* in Italian) shaped kitchen timer, and the *Pomodoro Technique* was born.

Thus, a kitchen timer is used to break the work time into intervals. We can say that the *Pomodoro Technique* is a time management method for students, perfectionists, and procrastinators of all kinds. The recommendation is work in focused, 25-minute intervals. In every computer, in every phone there are programs called "pomodoro". In fact, these programs organize your work in rhythms: you work for 25 minutes, and then take a break. It is usually 5-10-minute breaks. My own experience shows that those who take a break for 5-7 minutes every 25 minutes complete the tasks 1.5 hour sooner than those who prefer to work without intervals. Our brain can work intensively in a cycle of 25-30 minutes, after that the intensity drops sharply and therefore all further efforts become ineffective. I first read about it in the book about samurais. They had a rule "if you cannot solve a problem within 20 minutes, drop it." Because it is just waste of time. It is true. If you take some rest and then go back to work it really helps the brain to become efficient again. Breaks of 5-7 minutes are very effective. This is the fact and it has been scientifically proven. Just remember that school hours are organized like that. There are short breaks at the beginning of a school day and then along break for lunch.

Let discuss another example from my own experience. I will tell you about the approach we practiced in one of the companies. From 13:00 to 13:30, yoga or fitness was mandatory and only after that there was lunch. On the one hand, it seemed that we were losing an extra hour, but we followed up the team activity and within six months, we saw that the efficiency of employees increased dramatically. It did not increase within the first month. When people do yoga or fitness for the first month, they are not "charged". It takes time. The first changes were observed after three months of training because a skill is formed within 3 months. After 3 months, when people come to fitness, they do not waste energy; they start getting "charged". Therefore, it is important to remember that skills are formed very slowly.

When using the application, I start to do the task and I click the "start" button. After 25 minutes, the program launches the screensaver, which I cannot change for 7 minutes. That is, I can do anything and at this moment, I am already switching and having my rest. That is, this program gives me the opportunity to relax. It is very convenient. If you have never worked with any computer programs, I would recommend you to first install *"Pomodoro"*. There are applications for phones that will turn on music for you every 25 minutes to play for 7 minutes, then it stops and you can continue working.

People often use traditional diaries to do the planning. It is the simplest solution. However, the diary is just a list of things to be done and it does not always work correctly. Let us imagine you use a large diary, you can make it as an "accounting book" or a kind of a notebook of an A3 page size. You plan your day on the evening before the working day by writing what you need to do. Typically, you do not indicate either the degree of importance or anything like that. First, you just need to put down all the things so that you do not forget something. The second step is sorting things out. Never put personal and business tasks in one pile. It is better to always separate them. Otherwise, you will have to reread the list each time you open your diary. You can simply highlight these tasks in different colors.

There is also the **"Trello"** software, which is a project management tool. It is a simple, flexible, and powerful management tool. *Trello* is the program, which includes boards, lists, and cards to get a clear view of who is doing what and what needs to be done. Therefore, when we talk about our accounting book, this is your first level of *Trello*. That is, what is needed is sort out tasks. The first thing to do is to highlight the so-called incoming tasks, that is, those tasks that someone has assigned to you or it is your duty.

When planning things to be done it is important not to do an excessive planning. For example, you have planned 30 things, but you have done only five. Will you consider yourself a successful

person? No. Therefore, excessive planning leads to frustration. Do not try to do much. On the contrary, it is better to under-plan. It is better to add something during the day. Do what will really give you a feeling of being a success. Success stimulates the production of serotonin in the body, the "winner's hormone" and you will have a very positive feeling about yourself. Therefore, never plan too much for yourself. It is very important. Because it is better to do five things planned for today than to do the same 5 out of thirty planned.

Remember, if the task does not have a deadline, you do not have to do it. If you have not been given a deadline, then you do not have a task. This is the first rule of time management.

How to use the program "Trello"? It is recommended to mark your weekly plan, daily plan, "frogs", etc. To make it clearer, let us look at the weekly plan. There are tasks marked in red. We will now discuss what the red task is. It the task planned on Sunday, but this is in Europe and among Russians. If you are from some other country, for example, from Israel, where Sunday is also a working day, it will be different. It is important to remember if you are involved in the international business. The software discussed, the *Trello*, also has the so-called "Eat the frog" tool, which is one of the most valuable time and task management methods to help improve your productivity. It is a productivity system that helps you identify your most important and difficult tasks and getting them done first. I recommend using different colors for prioritization. Use red, for example, for a high level of tasks from the point of view of the senior management. If the bosses say that it is important, it means red priority for you as well. It is also important to understand that in the beginning it is necessary to do "red" things that require a lot of energy output. You should never postpone important things for later. What you need according to the standard recommendations is do three red tasks, three orange ones, and three yellow tasks.

I would like to sum up the basic principles of time management. Firstly, always plan your actions in writing, because this is how the brain areas that are responsible for logic work. When we speak, these areas of the brain may not work. If you compare the text that has been written with the spoken one, they may not coincide at all. In order to start working effectively, we need to connect those logical centers in the brain. Therefore, it is necessary to write everything. Besides, it is common knowledge that we perceive 83% of the information visually, that is, if you do not write things down, in fact, 83% of the information is lost. When you write, you start thinking about the wording. In time management, it is not the result but the action that is important. Depending on the action, you will need different tools. In time management, it is important to pay attention to the verb. The fact is that the brain reacts very strongly to the verb. Our thinking is directly connected with the motor zone. If you wrote the wrong verb, then, accordingly, the effectiveness of this action will be sharply reduced.

Principle Two. If you set big goals, then split up, make a decomposition - "they always eat an elephant in parts." The most important thing is not to rush. Because as Seneca said, "He who does quickly does twice".

Principle Three. Formulate the desired result, specific goals and objectives. It is important because instead of setting a goal, most people set a process. "I want to make money; I want to become the best." These are processes. The goal is a measurable thing that can be measured by SMART, or by some other techniques. For example, if we use the SMART principle, the goal should be concrete, measurable, achievable, relevant, but most importantly limited in time. That is, if you have no time limits and there is no punishment for it or a bonus, the brain does not perceive it as a goal. In fact, if you are a manager, this is the highest level. Formulate a goal correctly and quickly, because most of the problems arise in the fact that we formulate goals incorrectly. Setting the goal correctly helps the team to hear the manager, to understand him/her, and to do not what they usually do and what they know but what they are to.

Principle Four. Fix your action plan. The Gantt chart with which we started is a very good technique. The big project is divided into sub-projects, which are divided into sub-tasks. Using the chart we see the process from the start to finish and we see, for example, highlighted overdue tasks not completed on time. We need to visualize everything. The Gantt chart is a visualization of the load - you can enter hours here, e.g. how much time is spent on the task and this allows you to really use the capabilities of each person more effectively. On average, a person works well during the day for no more than 4.5 hours. 4.5 hours of effective work and the person is tired. The person is tired and his/her energy is not directed to creation, so we need to learn how to use these 4.5 hours effectively to really achieve results. The answer is prioritize. Do not try to make your whole working day perfect. If you try, after a while, you will have severe frustration and disappointment. There must be some kind of improvisation; a place for improvisation can be planned: some time to get some rest.

Principle Five. I am not going to discuss it in detail because the **"Eisenhower Matrix"** is a well-known task management tool that helps you distinguish between urgent and important tasks so you can establish an efficient workflow. It is a way to organize tasks by urgency and importance, so you can effectively prioritize your most important work. I would like to mention another tool, which is **Maslow's Pyramid.** Maslow's hierarchy of needs is one of the best-known theories of motivation. Maslow's theory states that our actions are motivated by certain physiological and psychological needs that progress from basic to complex. There are five levels in Maslow's pyramid of needs. From the bottom of the hierarchy upwards, the needs are: physiological (food and clothing), safety (job security), love and belonging needs (friendship), esteem, and self-

actualization. In fact, at the end of his life Maslow wrote that this is not the case with every person, because there are people who remain on two levels. Typically, each person has two basic levels, respectively, either from below or in the middle, or from above, but in fact, there is no sequence that he developed. Maslow's pyramid is just an ideal model. The fifth principle sells well. Always focus on the main thing, because solving the main task, you like a locomotive, begin to solve many other tasks and properly set time management allows you to solve the whole chain of tasks. That is, you can arrange tasks so that one task is solved and it immediately solves the second, third, fourth. Prioritization is important not from the point of view of "what is important" but it emphasizes on what is the basis for solving the next task. Here it is necessary to first make a foundation of the pyramid, and then go further. Sometimes unimportant things are at the heart of the pyramid, if you do not do them, you will not climb to the top. Therefore, in every business, in every case, you need to determine what the foundation is, without which you will not be able to go further.

Principle Six. Analyze your experiences, create your own time management rules. It is important to remember that "by the age of 40 you become your own doctor", because you have finally studied yourself. Observe yourself and adjust your time management accordingly. When I realized that each of us is an individual, unique person, and you cannot make template solutions for everyone, I realized that this is just the key to discovering talent and success in everyone. So I have already managed to raise 13 dollar millionaires. Only thanks to the fact that I did not try to limit them to templates. I never told them: "do it like everyone else, do it like Steve Jobs." On the contrary, discover your individual potential. Test yourself, observe yourself for 3 months keeping a diary, and you will understand what your own time management is. All these things are not some kind of know-how. That is what you know, but your goal is to assemble your own mosaic that works for you. The last but not the least principle is you should understand that it does not work if you do not have internal motivation or needs. Therefore, you need to find those "engines" that turn on inside you so that you have "the desire to live", as Sigmund Freud said. If there is a strong desire to live, then any time management is a good tool for achieving goals. If there is no desire to live, time management is an obligation that will destroy any of your initiatives. My concluding recommendation is as follows: be yourself, develop and experiment!

Basic scientometric indicators

1. Based on what indicator are journals ranked by quartile in Scopus

A. SJR

B. DOI

C. CiteScore

D. SNIP

2. Which Scopus index most corresponds to the Impact factor

A. SNIP

B. DOI

C. SJR

D. CiteScore

3. A scientist has 5 publications: 3 are cited 4 times, one is cited 5 times, and the last publication is not cited at all. What is the Hirsch index?

A. 3

B. 4

C. 5

D. 0

4. A scientist has 4 publications: 2 are cited 3 times, one is cited 10 times, and the last publication is not cited at all. What is the Hirsch index?

A. 5

B. 2

C. 3

D. 4

5. A scientist has 6 publications: 4 are cited 5 times, one is cited 10 times, and the last publication is not cited at all. What is the Hirsch index?

A. 6

B. 4

C. 5

D. 3

6. In which database it is impossible to find out a scientist Hirsch index:

A. Scopus

B. PubMed

C. Google Scholar

D. Web of Science

7. What is one of the criteria that university is among the world-class universities:

A. It is into rating systems, such as QS, THE (Times Higher Education)

B. The number of students is not less than 17.000

C. Availability of foreign educators

D. Publications in highly quality journals

8. If university is among the world-class universities, it could be determined by resource:

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10. What is the difference between Scopus and PubMed:

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Mendeley

12. How do access Mendeley?

A.Mendeley is available without registration within the University network

B. Mendeley is available only when registering by mail in the University domain

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D. To work with Mendeley, you need to use a login and password to Scopus or register with Mendeley

13. What requirements should the source meet to be cited by Mendeley

A . It must be uploaded to the Mendeley personal library

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D. All of the above

14. How to issue by Mendeley an article list of references in accordance with a journal's guidelines

A. The style is selected automatically depending on the subject of the article

B. Select the style required by the journal for more than 6000 styles from the CSL style library connected to Mendeley

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15. On which operating systems can the Mendeley be installed

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C. Any , except PDF publications

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A . Scopus and ORCID

B. ScienceDirect and Scopus

C. RSCI

D. ResearcherID and ORCID

Systematic reviews and meta-analyses

18. What stage are part of the systematic review writing?

A. Patient questionnaire

B. Data extraction

C. RCT

D. Laboratory analysis

19. Is meta-analysis a mandatory part of a systematic review?

A. Yes

B. Yes, but only if it is a systematic review of the epidemiology of the disease

C. Yes, but only if it is a systematic review of the test diagnostic abilities

D. No

20. Which type of research has the highest level of evidence

A. Clinical case

B. Systematic review

C. RCT

D. Case-control type study

21. On which platform can the systematic review protocol be registered?

A. DELPHI

B. PROSPERO

C. CONSORT

D. NIHR

22. Which checklist is used in the process of writing a systematic review?

A. LOOS

B. CRITERION

C. PRISMA

B. NASA

23. Decipher the abbreviation "PICO"

A . Publication, intervention, control/comparison, discussion

B. Motivations, installation, comparison, restriction

C. Prospects, innovations, systematization, organization

D. Population, intervention, control/comparison, outcome

Time management

24. Which of the resources in time management is considered as irreplaceable:

A. Skill

B. Finance

C. Memory

D. Time

25. Which time management tool recommends splitting your activity into intervals of 25-35 minutes:

A. Ganttchart

B. Pomodoro

C. Eisenhower Matrix

D. MegaPlan

26. Which time management tool allows to rank the "to-do" list according to their importance and urgency:

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Grants

27. Which funds support only applied works:

A . None

B. Innovation Promotion Fund

C. RFBR

D. RSF

28. What is crucial for receiving grants by young scientists?

A. The publications' rank as the first author

B. Number of presentations at conferences

C. Availability of publications in Q1-Q2 journals

D. Number of publications

29. What is the minimum value when receiving grants by young scientists?

a. The quality of the application

B. The availability of awards

C. The level of co-executors

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