9 Working with research areas

9.1 About research areas in SciVal

SciVal gives you the flexibility to model, evaluate and benchmark any field of research. This can be a strategic priority, an emerging area of science or any other topic of interest.

Once you have defined a research area, you can:

- Evaluate your institution's output in that field
- See which other institutions and researchers are active in this field
- See who the top performing and fastest growing countries, authors and institutions are in the field
- Compare your output in that field against that of other institutions
- See which journals contain the most publications from the Research Area
- See what the most important topics are within the field
- Identify existing and potential new collaboration partners

User-defined research areas offer an alternative to subject area classifications like the Scopus journal classification. They can be as granular or interdisciplinary as you like.

Research areas are not fixed, but represent a dynamic definition of a field of science. Whenever the publication data in Scopus is updated, new publications matching the definition are added to the research area.

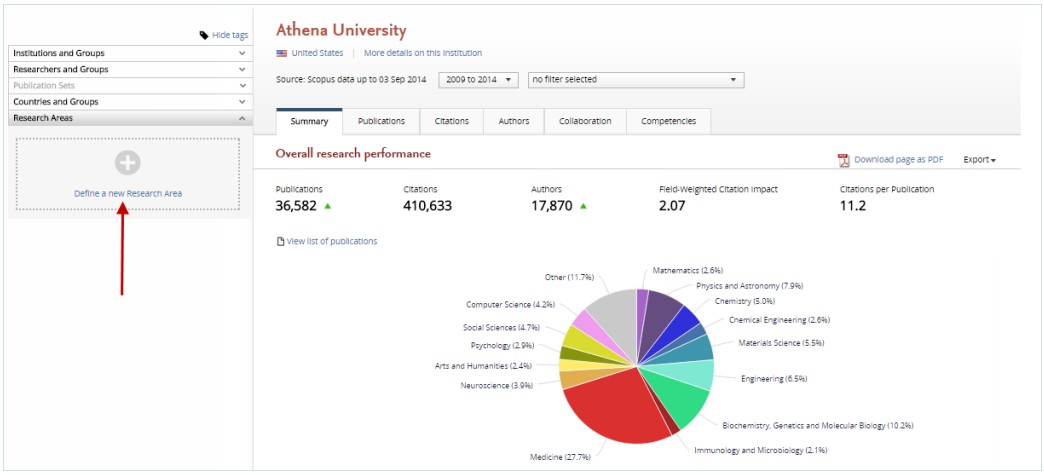
9.2 Defining a research area

The definition of a research area can either be keywords or entities. If this definition is too broad, you can apply filters to narrow it down further.

Let's say that your institution has made research on graphene a strategic focus. You are specifically interested in research on the thermal conductivity of graphene, and want to see how well your institution performs in this area.

You can define a Research Area from the entity selection panel in Overview, Benchmarking and Trends modules or from My SciVal

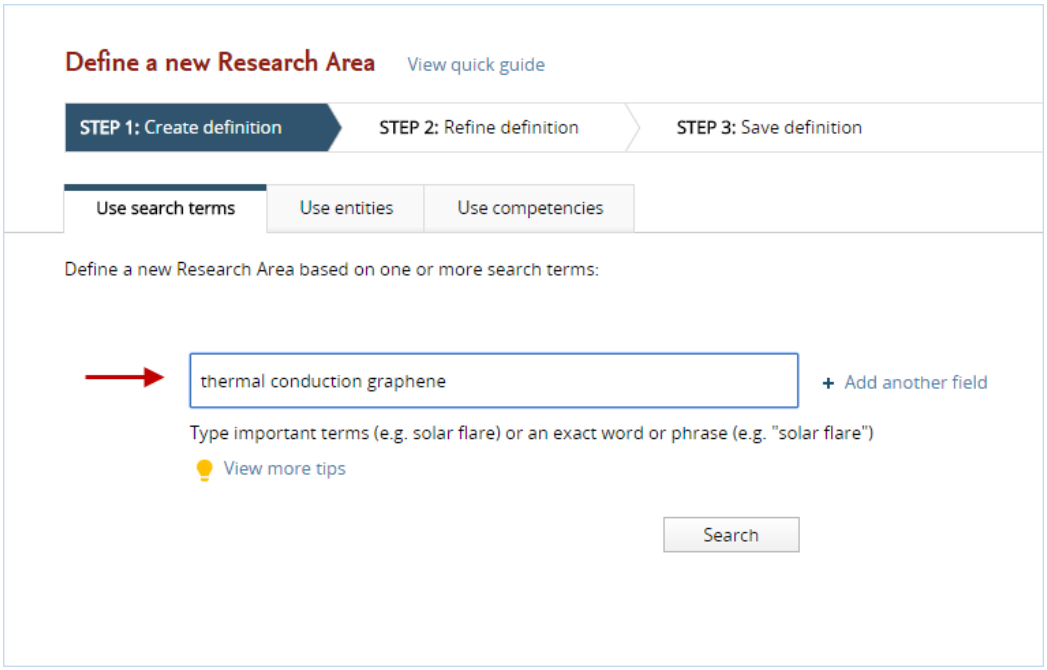
1. Go to the Overview, Benchmarking or Trends module
2. Open the "Research Areas" section of the entity selection panel on the left-hand side of the screen.
3. Click on "Add Research Areas", then "Define a new Research Area".



A pop-up window will now open. Here you can define your research area using a 3-step process.

Step 1. Start by defining your research area:

1. Go to the tab “Use search terms”
2. Enter “thermal conduction graphene” in the input field.
3. Press the Search button.

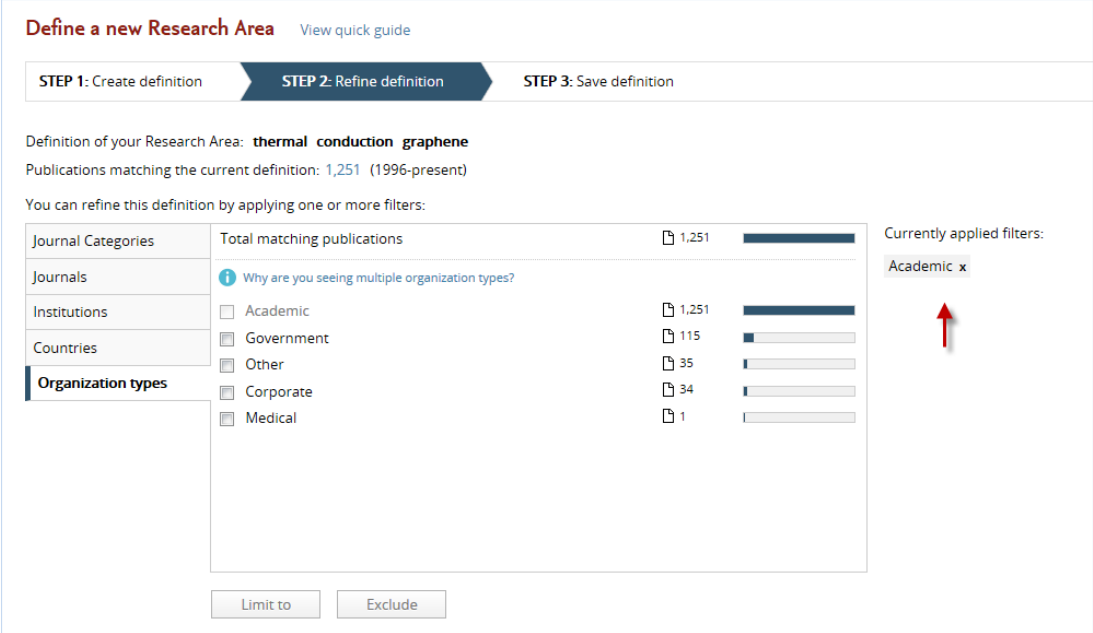


Step 2. You will now proceed to step 2. Here you can see how many publications worldwide (since 1996) match the definition “thermal conduction graphene”.

Apply filters (if needed) to narrow down the definition of your research area. Let’s say that you are interested only in academic publications. To filter out other organization types:

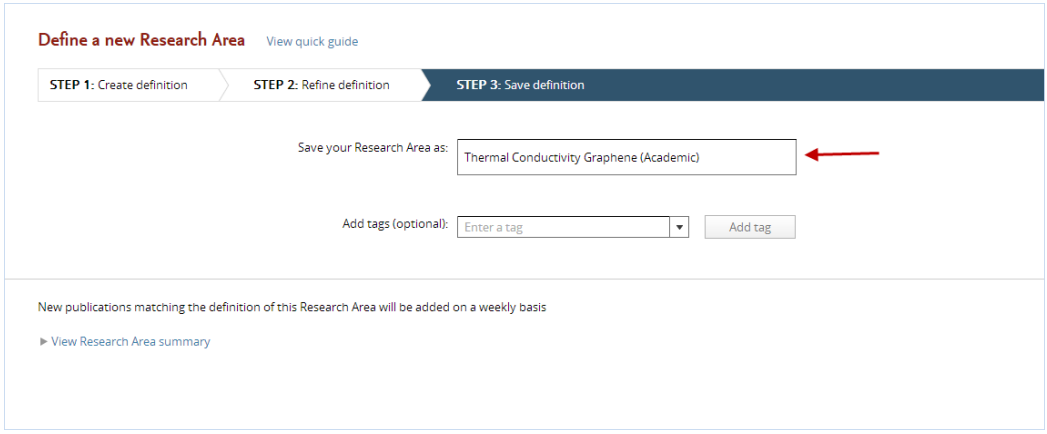
1. Click on the tab “Organization types”
2. Check off “Academic”
3. Click on “Limit to”

The filter you have just applied will now be shown on the right side of the screen.



Step 3. Click “Next Step” in the bottom right corner to proceed to step 3.

1. Name your research area “Thermal Conductivity Graphene (Academic)”



2 Click "Save and finish".

Your research area is now computed, and you are returned to your previous place in SciVal.

See Search tips for more help with using search terms to define a research area.

9.3 Predefined Research Areas

SciVal offers for instant analysis predefined Research Areas based on all Scopus 334 classifications in Overview, Benchmarking and Trends. For more information about the Scopus journal classification visit the Journal Title List.

9.4 Search tips

Search technology in SciVal. When you use search terms to define your research area, SciVal will search the Scopus database for publications matching your search terms. We search through the publication titles, as well as the abstracts and the keywords that Scopus assigns to each publication.

SciVal uses a search engine called Apache Solr, while Scopus uses FAST ESP. So the results returned from search queries might differ in SciVal and Scopus, even though they use the same data source. Compare Bing and Google Search for example - both search the Web, but return different results.

Key search tips for creating a Research Area

- Choose search terms that are specific and closely related to your research area
- Avoid very general terms like 'cell'

Your syntax will make a difference in how SciVal interprets your search

- 'Solar flare' is interpreted as 'solar AND flare', which may be located next to each other or in separate sentences
- 'Solar-flare' is also interpreted as 'solar AND flare'
- Enclose the search terms in double quotes (for example "solar flare") to bring back exact matches only. This search will find publications containing 'solar flare' but not 'solar-flare'.
- Stop words are always ignored. Stop words include personal pronouns (such as 'he', 'she', 'we', 'they'); most articles (such as 'the', 'an'); most forms of the verb to be (such as 'be', 'is', 'was'); and some conjunctions (such as 'as', 'because', 'if', 'when')

SciVal ignores accents and upper/lower case

- The search is not case-sensitive. It will match both upper-case and lower-case text
- Terms containing accented characters will be found if you type in the unaccented version, for example u to represent ü or ú

SciVal uses a stemming algorithm that reduces words to their root form

- If you enter 'fishing', 'fished', 'fish', or 'fisher', they will all be stemmed automatically so that the search is conducted on the root word, 'fish'
- If you use the singular form of a word, your search will retrieve the singular, plural, and possessive forms of most words
- Search strings containing wild-cards are not reduced to their root form

You can find variants using wild-card searching

- ? replaces a single character. For example, 'organi?ation' will return both 'organisation' and 'organization'
- * replaces one or more characters. For example, 'cat*' will return 'catastrophe', 'catheter', 'catnip', and so on

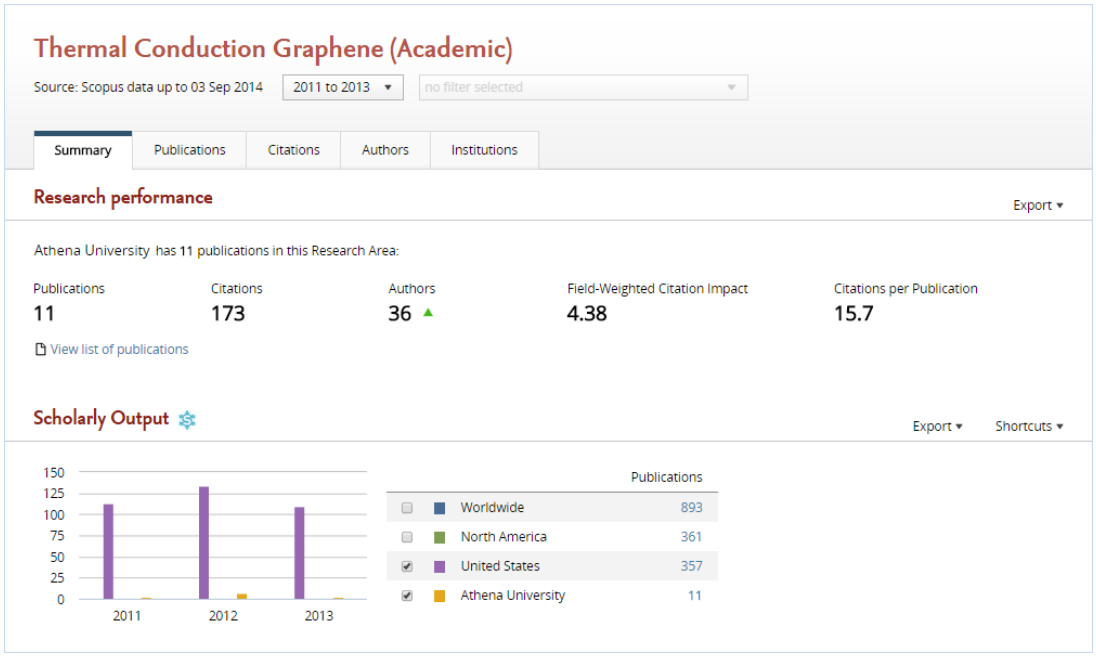
SciVal uses the Boolean operators AND, OR, NOT

- Entering 'blood cell' will search for 'blood AND cell'
- Entering 'cat AND dog OR mouse' we will search for '(cat AND dog) OR mouse'
- If you specify parentheses, they will be followed and not overridden. If you enter 'cat AND (dog OR mouse)' we will search for 'cat AND (dog OR mouse)'
- If you don't use parentheses, we will add them to simulate operative precedence - AND takes precedence over OR. If you enter 'cat OR dog AND mouse' we will search for 'cat OR (dog AND mouse)'

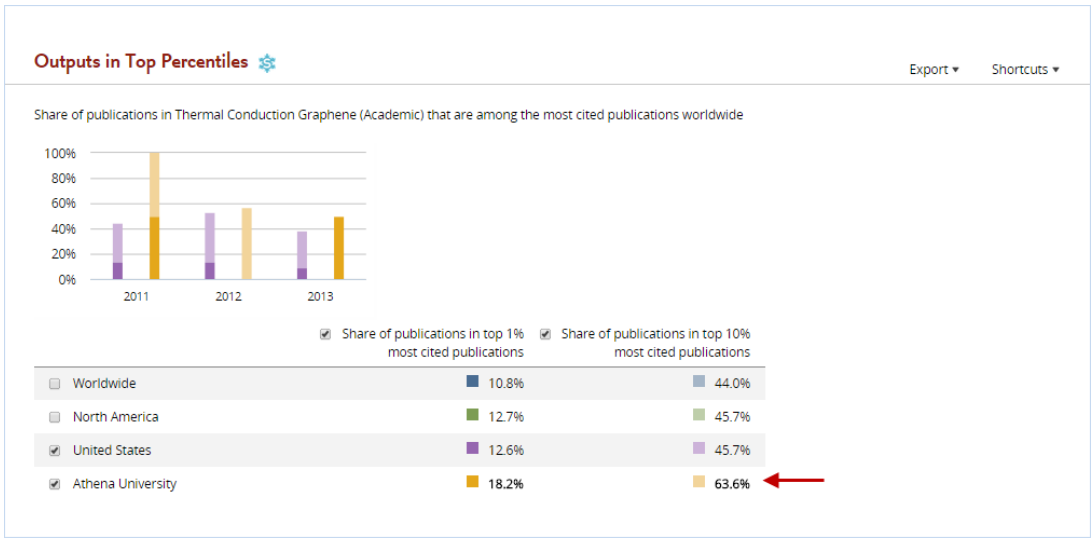
9.5 Analyzing a research area

9.5.1 Research areas in the Overview module

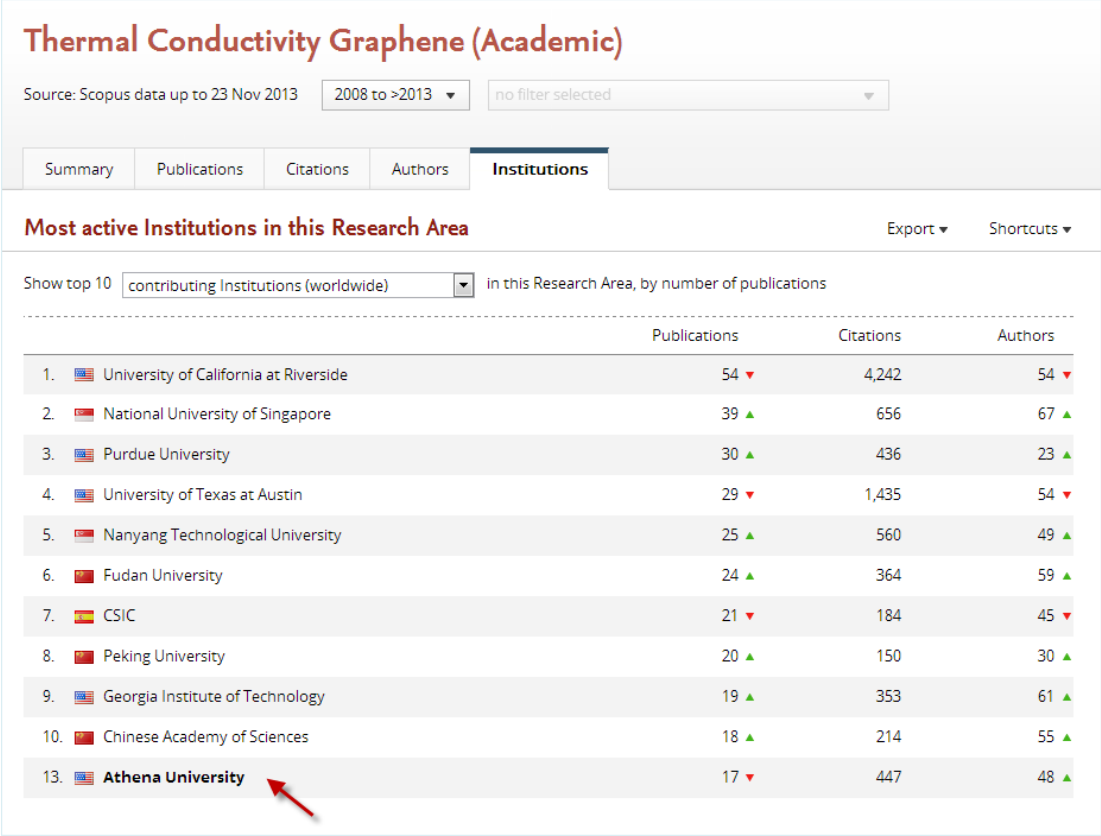
See your institution's output within a research area. In the Overview module, you can view your institution's contribution to a particular research area by number of publications and citations. How does your institution's output in this area compare to the national or worldwide output?



For more in-depth information, browse the Publications and Citations tabs. For example, to see how much of your institution's output was in the top 1% and 10% most cited publications worldwide, click on the Publications tab and scroll down to the Outputs in Top Percentiles section.



See which institutions are active within a research area. The Institutions tab gives you an overview of the top contributing institutions in the research area within your own region or country or worldwide. You can also see which institutions are collaborating with your institution within the research area.



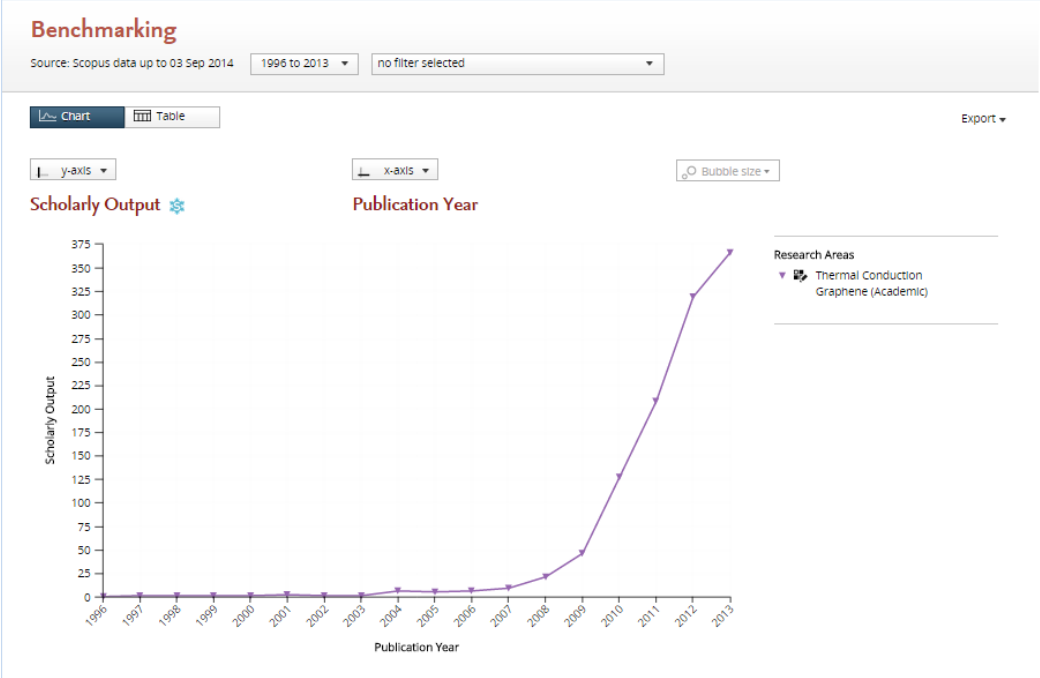
9.5.2 Research areas in the Benchmarking module

Use the Benchmarking module to explore the worldwide output in a particular research area from 1996 until the present.

- Go to the Benchmarking module
- Select the research area from the entity selection panel on the left-hand side

You can spot possible trends using a variety of different metrics, such as:

- Scholarly Output (number of publications)
- Field-Weighted Citation Impact (normalized citation count)
- Outputs in Top Percentiles (an indicator of research excellence)
- Journal Category Count (an indicator of multidisciplinarity)
- Collaboration (for instance international collaboration)

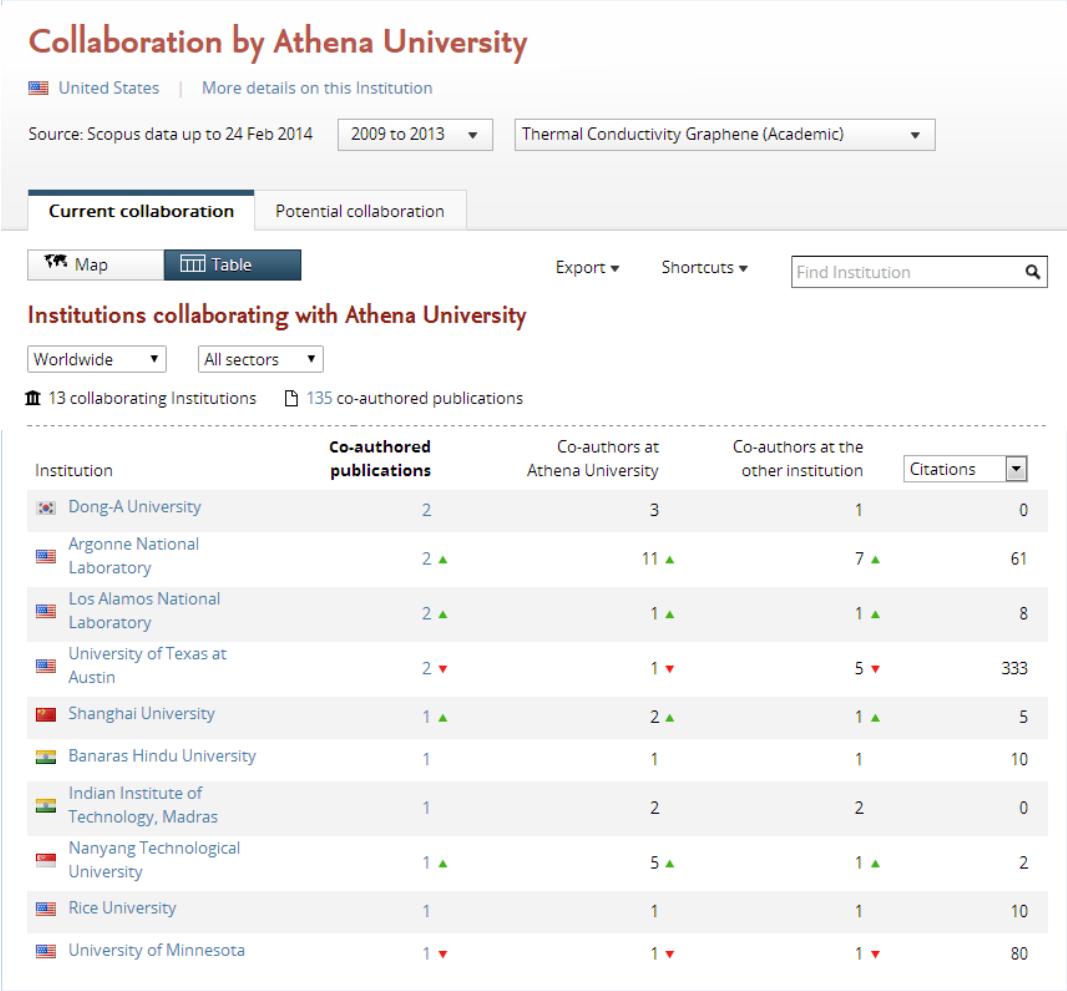


9.5.3 Research areas in the Collaboration module

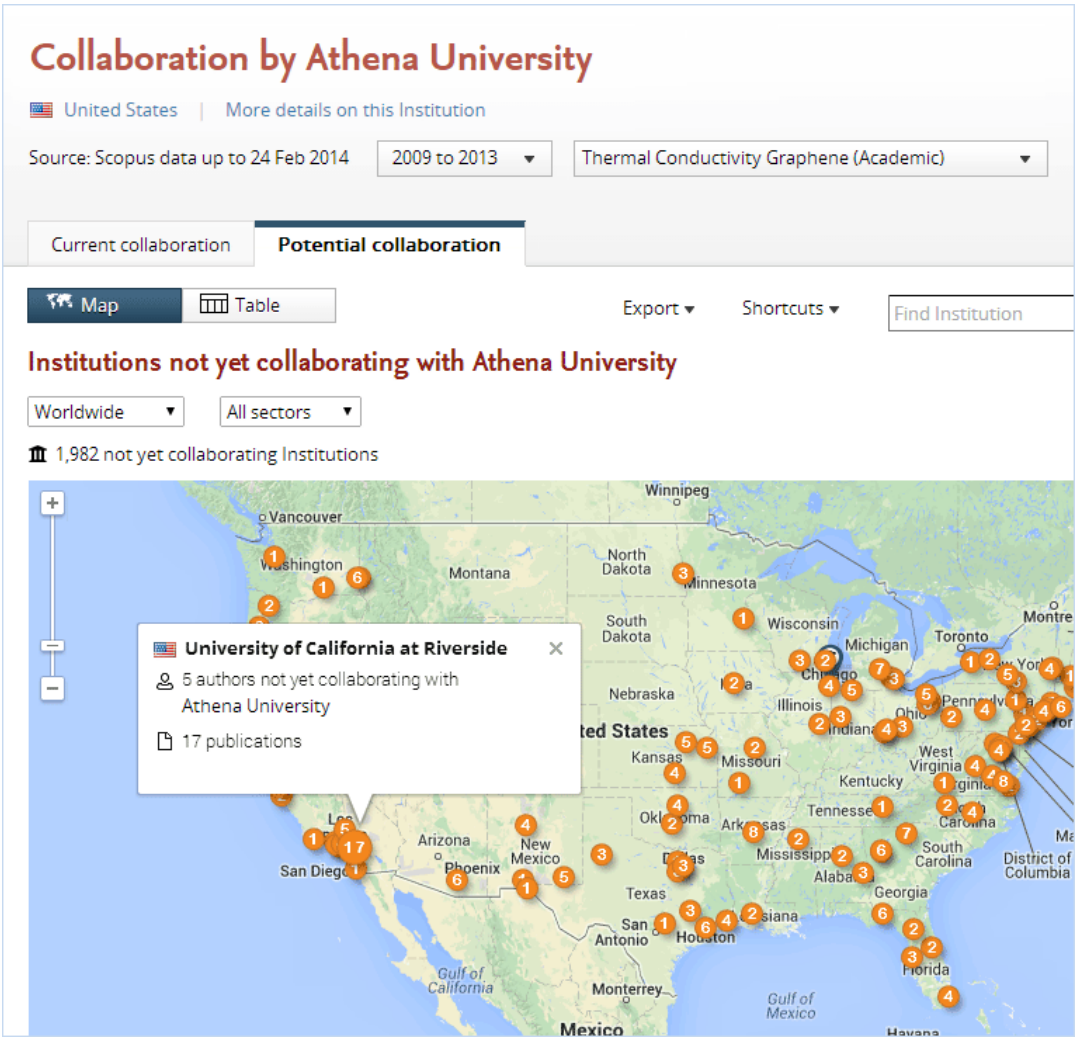
See your institution's collaboration partners in a research area. You can use the Collaboration module for an in-depth view of your institution's collaboration partners in a particular research area. Or identify potential new collaboration partners in that research area.

1. Go to the Collaboration module
2. Select your home institution from the entity selection panel on the left-hand side
3. Select the research area from the filter menu at the top of the page.

Switch from Map to Table view to view the full list of collaborating institutions. Which collaboration had the greatest citation impact?

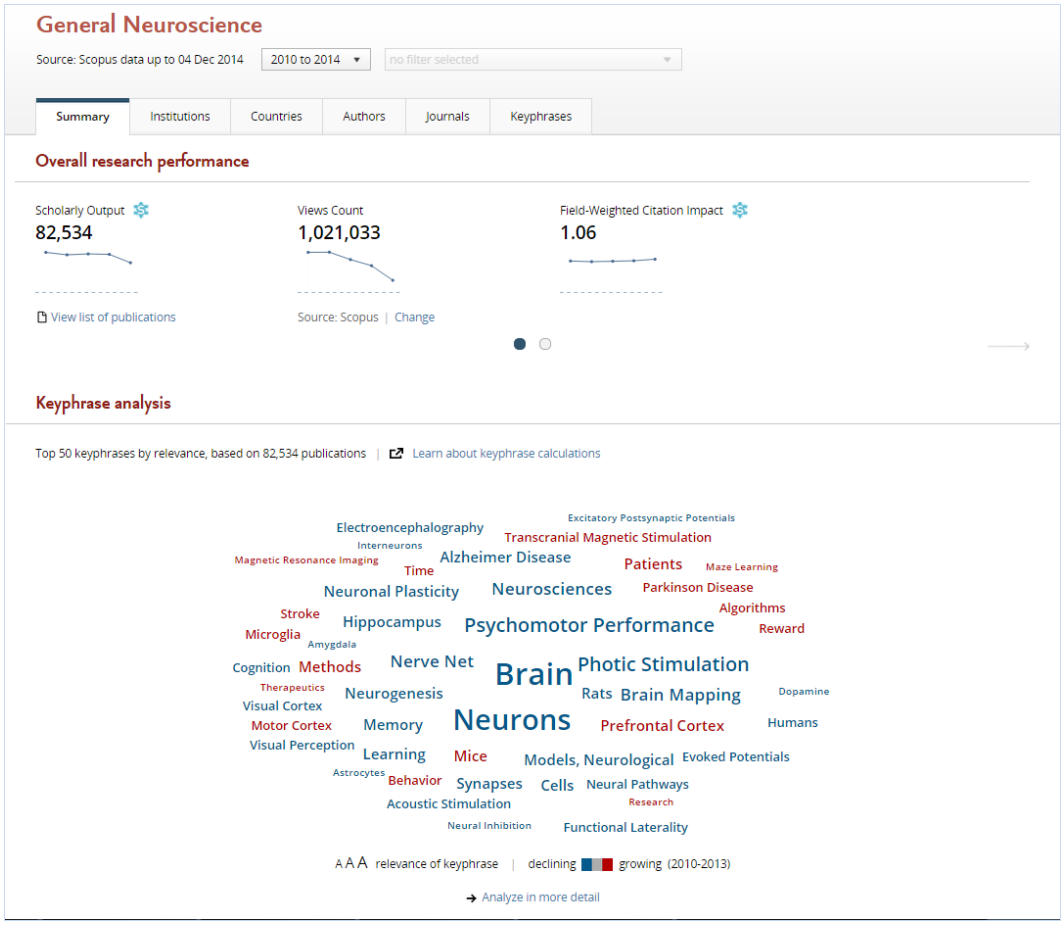


Find new collaboration partners in a research area. Switch to the “Potential collaboration” tab to view potential new collaboration partners in this research area. These institutions are active in this research area, but are not yet collaborating with your institution in that area.



9.5.4 Research areas in the Trends module

The Trends module is built for you to analyze Research Areas in depth. See who the top performers and rising stars are based on both output and usage data. Which subtopics are viewed the most and who is contributing to them?



See The Trends module for more information about how to analyze Research Areas.