

The Synthetic Biology Monitor

SYNERGENE facilitates the process of the shaping of SynBio research and SynBio-derived innovation according to societal needs (Responsible Research and Innovation) in many different ways. Easy and free access to existing studies of policy issues (regulatory frameworks, public perception and expectations, ethical issues) will help the players in this field of Research and Innovation to reflect on novel and better informed policy avenues to RRI. For this purpose Andrea Lorenzet and his colleagues from the University of Padua, Italy, develop the Synthetic Biology Monitor (SBM), a web interface connected with a database.



What can you do with the Synthetic Biology Monitor?

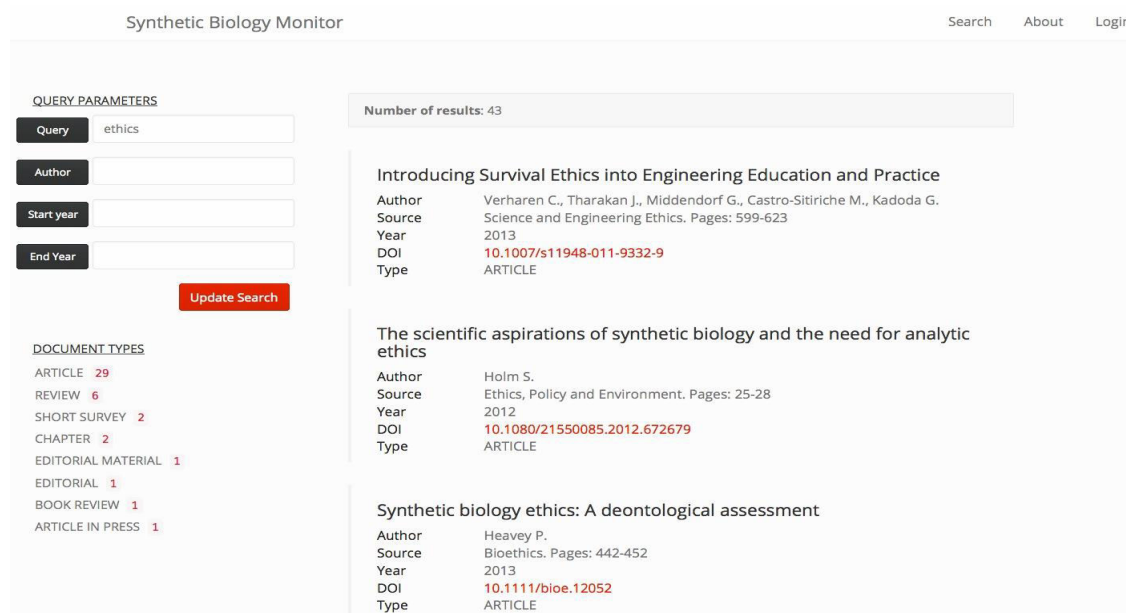
“The SBM is able to store information about social science literature and relevant policy documents (grey literature) regarding the development of the field of synthetic biology. Users can query the interface for relevant keywords connected to social and policy aspects of synthetic biology such as “risk” or “governance”, and obtain a list of relevant results collected from authoritative sources like the ISI Web of Knowledge and the Scopus database. The system provides full bibliographic references for indexed documents and a link (DOI number or URL), where further information and/or the full text can be downloaded. In some cases, access to these further details may require a subscription. Thus, the tool provides you with quick and easy access to available literature on any aspect you want to study. Access to systems like the Synthetic Biology Monitor can be for example used by professionals as a “reference bag” in order to interpret the most updated and breakthrough interpretations of synthetic biology within the social sciences and the policy making domain.”

What is the current status of the Synthetic Biology Monitor?

“The project is actually experimental and under development and is part of an ongoing collaboration between the Centre for environmental, ethical, legal and social decisions on emerging technologies (CIGA) of the University of Padua and the Department of Information Engineering of the same University. We uploaded a number of articles and ran a test of a beta-version, which has resulted in a number of improvements. We want to make it a flexible system that can be adapted to different needs. While at the moment registered users can manually upload metadata regarding relevant entries, it is foreseen that an automated crawler will collect and classify documents from web repositories and databases. This requires further development and testing.”

How does it work?

“Those who want to get a flavour of how the system works can go to [the SBM-page on CIGA website](#) without registering and enter keywords (see the snapshot below).



The screenshot shows the Synthetic Biology Monitor search interface. At the top, it says 'Synthetic Biology Monitor' with links for 'Search', 'About', and 'Login'. Below this is a search form with 'QUERY PARAMETERS' including fields for 'Query' (containing 'ethics'), 'Author', 'Start year', and 'End Year', and an 'Update Search' button. To the right, it displays 'Number of results: 43'. Three search results are shown, each with a title and metadata (Author, Source, Year, DOI, Type).

Document Title	Author	Source	Year	DOI	Type
Introducing Survival Ethics into Engineering Education and Practice	Verharen C., Tharakan J., Middendorf G., Castro-Sitiriche M., Kadoda G.	Science and Engineering Ethics. Pages: 599-623	2013	10.1007/s11948-011-9332-9	ARTICLE
The scientific aspirations of synthetic biology and the need for analytic ethics	Holm S.	Ethics, Policy and Environment. Pages: 25-28	2012	10.1080/21550085.2012.672679	ARTICLE
Synthetic biology ethics: A deontological assessment	Heavey P.	Bioethics. Pages: 442-452	2013	10.1111/bioe.12052	ARTICLE

It is important for now to stress the collaborative effort behind the creation of the synthetic biology monitor. Not only users can freely query for information regarding the social, ethical, and legal aspects of synthetic biology, but they can also contribute proactively to the generation of the database by adding new entries in the repository by filling the web form provided in the website. Users are encouraged to provide feedback and suggest websites to be periodically searched for relevant documents and reports; suggestions should be sent to <mailto:andrea.lorenzetti@unipd.it>.”

How does this contribute to RRI?

“Our team is thus proposing not only a technical platform, but also most importantly a new wider approach for consulting which is based on the exploitation of information engineering and the potentialities of the web.

Moreover, a dedicated platform for innovation topics, like in this case for synthetic biology, may be replicated for other topics (like for example nanotechnology, genomics), and constitute the basis for a support infrastructure for scholars, policy makers, and science communicators who have a professional interest into these fields.”

The SBM software architecture relies on four open source projects: [elasticsearch](#) ([view license](#)), [Node.js](#) ([view license](#)), [Express](#) ([view license](#)), [Bootstrap](#) ([view license](#)), and [Bootswatch](#) ([view license](#)).

The University of Padua has a [blog on responsible research and innovation](#) where data and information about synthetic biology and in perspective to other topics is posted.