

Deliverable D1.1 Report

KPIs definition for ACORN

Grant Agreement number:	807281
Project Acronym:	ACORN
Project Title:	A Nanoparticle-Based Therapeutic Applications and Detection of Carbon Monoxide Releasing Molecules
Funding Scheme:	H2020-TWINN-2018
Name, Title, organisation of the scientific representative of the project's coordinator:	Tiago Rodrigues, PharmD, PhD, Instituto de Medicina Molecular (iMM)
Tel:	(+351) 217 999 565
E-mail:	alexandrarosa@medicina.ulisboa.pt
Project website address:	Not yet available

Work Package number:	WP1
Deliverable number:	D 1.1
Expected Delivery date:	M2; 31.10.2018
Delivery Date (submission to the EC):	29.10.2018
Deliverable type:	Report
Dissemination level:	Public

Contents

Overview of the report	2
Key Performance Indicators (KPIs)	2
The importance of KPIs in research	2
KPIs in ACORN	3
Monitoring KPIs throughout ACORN	6
Data sources	6

Overview of the report

This report describes the completion of deliverable D1.1: KPIs definition for ACORN. The importance of having Key Performance Indicators in research is framed. The list of proposed KPIs will be adjusted whenever needed, at each reporting period.

Key Performance Indicators (KPIs)

The importance of KPIs in research

As stated in the “Performance Indicators for Assessing and Benchmarking Research Capacities in Universities”¹, by UNESCO, in 2005:

- *Interest in benchmarking and the associated use of performance indicators is not an activity restricted to the higher education sector.*
- *An authoritative definition of performance indicators does not exist, and while they are often thought to be solely quantitative, qualitative performance indicators exist too.*
- *Performance indicators are often used for one of three purposes: improvement, planning or accountability, (...) (which) are not mutually exclusive, but driven by different forces: improvement and planning are usually questions of concern to individual institutions; (...) questions of accountability, are raised mainly by governments.*
- *The application of performance indicators to research is not straightforward or noncontroversial.*

In fact, several contributions to the application of performance indicators to research have been performed since then, including:

¹Performance indicators for assessing and benchmarking research capacities in Universities, UNESCO, 2005 (<http://dfcentre.com/wp-content/uploads/2014/05/Performance-indicators-for-research-capacity.pdf>)

- The San Francisco Declaration of Research Assessment², currently signed by 622 organisations, which contains a series of recommendations for funding agencies, institutions, publishers, organisations that supply metrics and researchers;
- The Leiden Manifesto³ for research metrics, listing ten principles to guide research evaluation;
- The report for the Higher Education Funding Council for England⁴, which identifies several recommendations for further work and action across the UK research system.

These contributions highlight important factors in research assessment, including but not limited to the need of not exclusively relying on quantitative research metrics, but using them together with expert peer-reviewing assessment, as well as resorting to multiple indicators to provide a more robust overview.

Several initiatives exist aiming the standardisation of research metrics, covering the entire spectrum of research activities, and finally enabling institutional benchmarking. One of such initiatives is Snowball Metrics⁵, an academia-industry collaboration, between several UK research-intensive universities (i.e. University of Oxford, University College London, University of Cambridge, Imperial College London, University of Bristol, University of Leeds, Queen's University Belfast, and University of St Andrews) and Elsevier, with working groups in USA and Australia / New Zealand as well. A resulting Metrics Recipe Book⁶, intended to complement (and not to replace) peer review and expert opinion, provides a set of metrics for research, enterprise activities/ economic development and post-graduate education.

A recently conducted study by the Science and Technology Options Assessment, from the European Parliament⁷, has pointed towards the desirability of a transnational system for research performance assessment. The technical feasibility of a European Integrated Research Information Infrastructure, a process that would require a joint effort from all Member States as well as the identification of a standard approach to the definition of outputs and other indicators was highlighted.

KPIs in ACORN

The fourteen initially proposed KPIs, for the eight major objectives (Table 1) of the ACORN project have been analysed and one of these prior KPIs has been eliminated (OB1, KPI: Number of citations), as a result of the internal evaluation on the possibility to assess it throughout the project (Tables 2, 3). All KPIs are focused at IMM Lisboa, since in accordance with the scope of Twinning call, the ACORN project aims at placing IMM Lisboa within the core

²San Francisco Declaration of Research Assessment, 2012 <http://www.ascb.org/dora/>

³Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke, Ismael Rafols, Nature, 23 April 2015, vol 520, 429-431 (<http://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351>)

⁴The metric tide: Report of the independent review of the role of metrics in research assessment and management. 2015 (http://www.hefce.ac.uk/pubs/rereports/Year/2015/metrictide/Title_104463_en.html)

⁵http://www.snowballmetrics.com/wp-content/uploads/snowball-recipe-book_HR.pdf

⁶http://www.snowballmetrics.com/wp-content/uploads/snowball-recipe-book_HR.pdf

⁷Measuring scientific performance for improved policy making, European Parliament, April 2014 (http://www.europarl.europa.eu/stoa/cms/home/publications/studies?reference=IPOL-JOIN_ET%282014%29527383)

of a European network of laboratories that seeks to produce cutting-edge research in the field of gaseous signalling molecules (gasotransmitters). These KPIs will be used to monitor the progression of the project, together with the predicted deliverables and the qualitative evaluation provided by the involved stakeholders.

Table 1. ACORN objectives

OB	Definition
1	Effectively place IMM at the forefront of Science and Processes in Europe, specifically in Portugal
2	Incite a challenged and ambitious research community
3	An increased participation in international collaborative projects
4	A rooted entrepreneurial and risk-taking spirit among IMM's community
5	Potentiate a better integration of IMM in regional, national and European business communities and impacting EU policy
6	Leverage IMM's research excellence and impact across its different research areas
7	A scientific and innovative boost to the region and the country
8	Contributing to increased scientific awareness among the general public

Legend: OB – Objective

Table 2. KPIs in ACORN

OB	KPI
1	1.1. Number of scientific publications in peer-reviewed journals 1.2. Number of newsletters or press releases 1.3. Number of scientific publications with international partners 1.4. Number of students with international exposure
2	2.1. Number of researchers benefiting from international mentoring 2.2. Number of international expert visits to IMM
3	3.1. Participation in collaborative proposals 3.2. Number of submitted versus funded projects
4	4.1 Number of new patents 4.2. Number of entrepreneurial training and innovation initiatives attendance
5	5.1. Number of new contracts and collaboration agreements with industry
6	6.1 Number of documents relative to the institution
7	7.1 Number of documents relative to country/territory
8	8.1 Number of public engagement activities

Legend: OB – Objective; KPI – Key performance indicator.

Table 3. KPIs definition

KPI	Definition
1.1	Total number of original peer-reviewed publications, in <i>medicinal chemistry and chemical biology</i> field, published in OPEN ACCESS peer-reviewed journals. In most cases we will consider depositing in a server such as bioRxiv or ChemRxiv before publication.
1.2	Total number of documents for the <i>medicinal chemistry and chemical biology</i> research field

1.3	Total number of scientific publications, in <i>medicinal chemistry and chemical biology</i> research field, with co-authors from institutions located outside Portugal
1.4	Number of master and PhD students at IMM participating in international events, including but not limited to conferences, workshops and summer schools
2.1	Number of young researchers at IMM Lisboa benefiting from international mentoring through ACORN
2.2	Number of international expert visits to IMM, including but not limited to those under the scope of seminar series, workshops, conferences and summer schools held at/ organised by IMM Lisboa
3.1	Number of participations, as beneficiary, coordinator or other (e.g. subcontracted, third party), in collaborative project proposals submitted to international competitive funding
3.2	Success rate in competitive international funding for consortium projects
4.1	Number of filed patents with IMM researchers as inventors
4.2	Number of attended entrepreneurial training and innovation initiatives under the scope of ACORN
5.1	Number of contracts, collaboration agreements and services celebrated with non-academic partners
6.1	Number of documents for IMM Lisboa
7.1	Number of documents in <i>medicinal chemistry and chemical biology</i> research field in Portugal
8.1	Number of public engagement initiatives developed at IMM Lisboa under the scope of ACORN project

Monitoring KPIs throughout ACORN

Key Performance Indicators will be monitored throughout the ACORN project. Together with the predicted deliverables and the qualitative feedback provided by the stakeholders, these will lay the foundations for the impact assessment of the project implementation. At specific monitoring periods (Table 4), the most recent and complete available data will be used to assess the evolution of each specific KPI, ensuring that all KPIs refer to the same time.

Table 4. KPIs monitoring periods

Monitoring period	Definition	Delivery time
2016-2018	Period corresponding to the 3-year window prior to the start of the project	D 1.2 (M2)
2019-2020	Period corresponding to the 2/3 of the project - interim evaluation	Interim report (M26)
2022-2024	Period corresponding to the forecast of the 3-year window following the end of the ACORN project	D 1.7 (M36)

For all KPIs, the period corresponding to the 3-year window prior to the start of the project will be used as base line for assessing their evolution throughout the project.

Data sources

Research metrics and performance indicators will be retrieved and analysed using freely available sources (or their free of charge components), as well as sources currently available through national initiatives (e.g. Web of Science and Journal Citation Reports, from Thomson Reuters, currently available at IMM Lisboa, through B-ON initiative⁸), that may include but are not limited to:

Scopus, from Elsevier

Scopus⁹ is Elsevier's citation database of peer-reviewed research literature: scientific journals, books and conference proceedings. According to Elsevier, Scopus has over 20,500 titles from more than 5,000 international publishers, offering researchers an accurate, easy and comprehensive tool to support their research. Additionally, through the author profile page, an author's total citation and document count, *h*-index and ORCID record (if available) may be accessed.

ORCID

Open Researchers and Contributor ID (ORCID)¹⁰ is an open source, non-profit, community-driven effort to create and maintain a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers.

⁸<http://www.b-on.pt/quem-somos/>

⁹<https://www.elsevier.com/solutions/scopus>

¹⁰<http://orcid.org/about/what-is-orcid>

ORCID provides two core functions: a registry to obtain a unique identifier and manage a record of activities, and APIs that support system-to-system communication and authentication. ORCID makes its code available under an open source license, and will post an annual public data file under a CC0 waiver for free download.

The ORCID Registry is available free of charge to individuals, who may obtain an ORCID identifier, manage their record of activities and search for others in the Registry. Organizations may become members to link their records to ORCID identifiers, to update ORCID records, to receive updates from ORCID and to register their students and employees for ORCID identifiers.

ORCID allows the integration with other metrics systems (e.g. Pure, from Elsevier, as performed by the Aalborg and Aarhus Universities, among several others) as well as with information management systems (e.g. Symplectic, as performed by the University of Cambridge, Imperial College London, University of Oxford, University of Melbourne, etc).

ORCID is currently being used by different funding agencies (such as National Institutes of Health (NIH), USA and Fundação para a Ciência e Tecnologia (FCT), Portugal), regulatory authorities (e.g. Food and Drug Administration (FDA), USA) and publishers (e.g. Nature Publishing Group, Proceedings of the National Academy of Sciences (PNAS), Public Library of Science (PLOS), Springer and Elsevier).

[SCImago Journal and Country Rank \(SJR\), from Elsevier](#)

The SCImago Journal & Country Rank¹¹ is a portal that includes the journals and country scientific indicators developed from the information contained in the Scopus database (from Elsevier B.V.). This platform is named after the SCImago Journal Rank SJR indicator, developed by SCImago from Google PageRank™ algorithm.

SCImago is a research group from the Consejo Superior de Investigaciones Científicas (CSIC), University of Granada, Extremadura, Carlos III (Madrid) and Alcalá de Henares, dedicated to information analysis, representation and retrieval by means of visualisation techniques.

[Web of Science, from Thomson Reuters](#)

Web of Science¹² is a source of scholarly research data and it provides metrics based on citation activity of global and regional journals, books and proceedings.

The citation Report tool captures citation activity and identifies citation trends graphically within and across all citation resources on Web of Science. Formatted reports can be created allowing viewing citation information for an individual or an institution, such as sums of Times Cited, average citations per item and year, number of results found, and the *h*-index.

Formatted reports are automatically generated in the absence of unique researcher identifiers.

¹¹<http://www.scimagojr.com/index.php>

¹²<http://thomsonreuters.com/content/dam/openweb/documents/pdf/scholarly-scientific-research/fact-sheet/wos-next-gen-brochure.pdf>

[ResearcherID, from Thomson Reuters](#)

ResearcherID¹³ is a unique identifier that enables researchers to manage their publication lists, track their citations and *h*-index and identify collaborators.

Thomson Reuters is a founding member of ORCID, an industry-wide effort to address author disambiguation and to connect researchers to their work by associating a persistent author identifier. The ResearcherID ORCID integration allows for the seamless exchange of publication data between the two systems. ORCID is a platform-agnostic identifier, whereas the ResearcherID identifier is specific to Thomson Reuters. These are complementary attribution identifiers and it is essential that scholarly authors and researchers have both for a seamless data exchange.

[Journal Citations Report, from Thomson Reuters](#)

The Journal Citation Reports (JCR)¹⁴ module within InCites offers, according to Thomson Reuters, a systematic way to critically evaluate the world's leading journals, with quantifiable, statistical information based on citation data. By compiling articles' cited references, JCR helps to measure research influence and impact at the journal and category levels and shows the relationship between citing and cited journals.

JCR allows listing journals through subject areas and sort them using different criteria, including journal impact factor.

[Organisation for Economic Co-Operation \(OECD\)](#)

[OECD.Stat](#)¹⁵ includes data and metadata for OECD countries and selected non-member economies. It is the statistical online platform of the OECD where users can search and access OECD's statistical databases.

[OECD Data](#) allows finding, comparing and sharing the latest OECD data: charts, maps, tables and related information.

[Eurostat](#)

Eurostat¹⁶ is the statistical office of the European Union located in Luxembourg. Eurostat's main role is to process and publish comparable statistical information at European level that enable comparisons between countries and regions, through a common statistical 'language' that embraces concepts, methods, structures and technical standards.

¹³<http://thomsonreuters.com/content/dam/openweb/documents/pdf/scholarly-scientific-research/fact-sheet/wos-next-gen-brochure.pdf>

¹⁴<http://thomsonreuters.com/en/products-services/scholarly-scientific-research/research-management-and-evaluation/journal-citation-reports.html>

¹⁵<http://stats.oecd.org/Content/themes/OECD/static/help/WBOS%20User%20Guide%20%28EN%29.PDF>

¹⁶<http://ec.europa.eu/eurostat/about/overview/what-we-do>

The statistical authorities of each Member State collect, verify and analyse national data and send them to Eurostat. Eurostat's role is to consolidate and harmonize the data ensuring they are comparable. Eurostat is indeed the only provider of statistics at European level.

Statistics Portugal

Statistics Portugal¹⁷ is the entity responsible for ensuring the production and dissemination of official statistical information against the background of independence and permanent vigilance regarding the emergence of new requirements, in a society where such information has become a prerequisite for economic and social development.

Statistics Portugal information is obtained from:

- Administrative sources, in which data from administrative procedures are used for statistical purposes;
- Extensive surveys (censuses), in which every item from a given population is subject to observation: Population and Housing Censuses, and Agricultural Census;
- Sample surveys, in which data are collected from a sample representing the population under observation. The calculation process resorts to statistical methods in order to extrapolate data resulting from the sample survey of the population in study.

PORDATA

The Database of Contemporary Portugal, PORDATA, organised and developed by the Francisco Manuel dos Santos Foundation was created in 2009. It embodies one of the priorities of the Foundation: the collection, compilation, systematization and dissemination of data on multiple areas of society, for Portugal and its municipalities, and for European countries. The reported statistics derive from official and certified sources. The Foundation's endeavour consists in collecting and organizing the available data, making it as clear and accessible as possible. Also, the important work of contextualized information, the so-called "metadata", as an inextricable part of the data, enables its adequate interpretation. The Foundation provides a free of charge public service to the Portuguese society. .

Additionally, through a collaboration with Altmetric, IMM will have access to altmetrics data.

Altmetric

Altmetrics¹⁸ are metrics and qualitative data that are complementary to traditional, citation-based metrics. They include, but are not limited to, peer reviews on Faculty of 1000, citations on Wikipedia and in public policy documents, discussions on research blogs, mainstream media coverage, bookmarks on reference managers like Mendeley and mentions on social networks such as Twitter.

¹⁷https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_cont_inst&ine_smnu.boui=13918434&INST=53864&xlang=en

¹⁸<https://www.altmetric.com/about-altmetrics/what-are-altmetrics/>

Since early 2012, Altmetric has been monitoring a range of non-traditional sources, searching for links and references to published research. Today it contains mentions of over 4 million research outputs, including journal articles, datasets, images, white papers, reports and more, and is constantly growing.