

A blurred, 3D rendering of the letters 'DFG' in a light blue color, set against a background of soft, out-of-focus light rays and geometric shapes in various shades of blue.

Best practice in assessing Research Excellence by Public Research Funders

Quality over quantity!

The German Research Foundation (DFG)

Who we are

1. The DFG is Germany's largest independent Basic Research Funding Agency
2. The DFG is an association of the German Universities and the large Research Organisations
3. The DFG receives its budget from the German Federal Government and the 16 German Länder (States)
4. The DFG is spending ~3 bn € per year on Bottom Up Research
5. The DFG is serving all fields of Science and the Humanities



Assessing Research Quality

The role of publications

Function and Purpose of Scientific Publications:

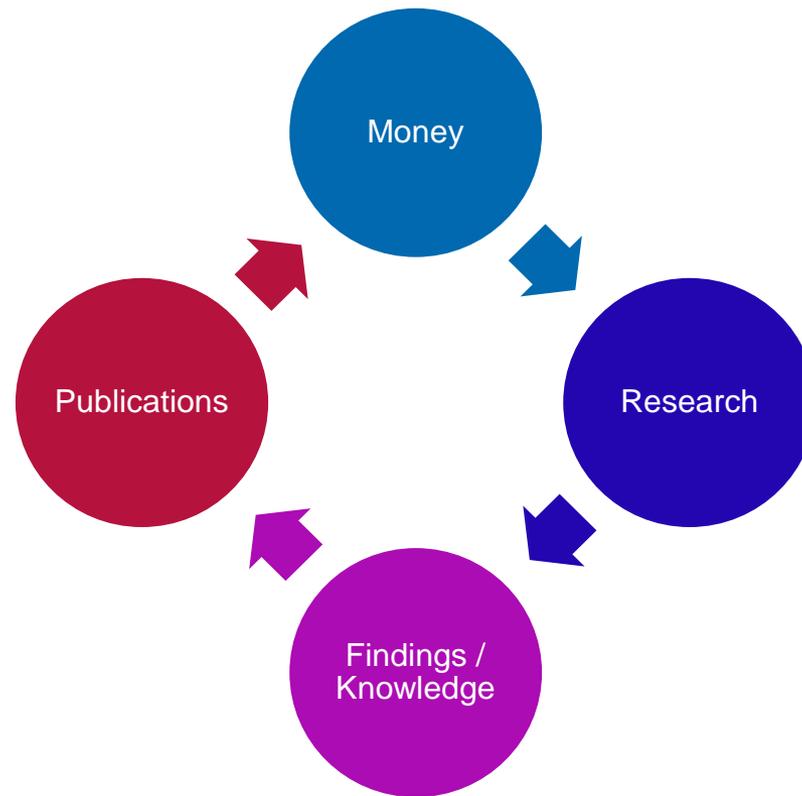
- Disseminate and safeguard Scientific Findings and Knowledge
- Attribute Creatorship/ Authorship and subsequently Reputation to the Scientists

Funding facts:

1. Publicly funded Research usually results in Publications
2. Publications play an important role in assessing Public Research

Assessing Research Quality

The role of publications



DFG Review Boards: Shares of Publication Types

Humanities and Social Sciences

		DFG Review Board												
		Monographs	Anthologies	Journal articles	Pre-prints	Non publisher publications	Data packages	Software/code	Patents	Audio-visual media	Images/ graphs	Alternative publication types	Other	
Humanities and Social Sciences		4	4	4	1	2	1	1	1	1	5	1	--	Ancient Cultures
		5	5	5	1	2	1	1	1	1	2	2	--	History
		5	2	1	1	1	1	1	1	1	1	1	--	Fine Arts, Music, Theatre and Media Studies
		3	3	4	2	4	2	2	1	1	1	1	--	Linguistics
		3	3	3	1	1	1	1	1	1	1	1	--	Literary Studies
		4	3	3	2	2	1	1	1	2	2	2	--	Social and Cultural Anthropology, Non-European Cultures, Jewish Studies and Religious Studies
		5	4	3	1	2	1	1	1	1	2	2	--	Theology
		3	3	3	2	2	1	1	1	--	1	2	--	Philosophy
		3	4	3	1	2	2	1	1	1	1	1	--	Educational Research
		2	1	5	1	1	1	2	1	1	2	2	--	Psychology
		3	3	3	2	2	2	2	1	1	1	2	--	Social Sciences
		1	1	5	4	1	2	2	1	1	1	1	--	Economics
	5	3	3	1	2	1	1	1	1	2	2	--	Jurisprudence	

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		5	2	1	1	1	1	1	1	1	1	1	--	Fine Arts, Music, Theatre and Media Studies
		3	3	4	2	4	2	2	1	1	1	1	--	Linguistics
		3	3	3	1	1	1	1	1	1	1	1	--	Literary Studies
		4	3	3	2	2	1	1	1	2	2	2	--	Social and Cultural Anthropology, Non-European Cultures, Jewish Studies and Religious Studies
		5	4	3	1	2	1	1	1	1	2	2	--	Theology
		3	3	3	2	2	1	1	1	--	1	2	--	Philosophy
		3	4	3	1	2	2	1	1	1	1	1	--	Educational Research
		2	1	5	1	1	1	2	1	1	2	2	--	Psychology
		3	3	3	2	2	2	2	1	1	1	2	--	Social Sciences
		1	1	5	4	1	2	2	1	1	1	1	--	Economics
	5	3	3	1	2	1	1	1	1	2	2	--	Jurisprudence	

DFG Review Boards: Shares of Publication Types

Life Sciences

		DFG Review Board											
		Monographs	Anthologies	Journal articles	Pre-prints	Non publisher publications	Data packages	Software/code	Patents	Audio-visual media	Images/ graphs	Alternative publication types	Other
Life Sciences	1	1	5	2	3	2	1	1	1	1	1	--	Basic Research in Biology and Medicine
	1	2	5	3	4	3	2	2	2	1	2	--	Plant Sciences
	1	1	5	2	2	1	1	1	1	1	1	--	Zoology
	1	2	5	3	4	4	2	2	1	1	1	--	Microbiology, Virology and Immunology
	1	1	4	1	3	1	1	1	1	1	2	--	Medicine
	1	1	5	2	2	2	1	1	1	1	1	--	Neurosciences
	1	2	5	2	2	3	1	1	1	1	2	--	Agriculture, Forestry and Veterinary Medicine

DFG Review Boards: Shares of Publication Types

Natural Sciences

		Monographs	Anthologies	Journal articles	Pre-prints	Non publisher publications	Data packages	Software/code	Patents	Audio-visual media	Images/ graphs	Alternative publication types	Other	DFG Review Board
Natural Sciences		2	2	5	2	2	2	1	2	1	1	1	--	Molecular Chemistry
		2	2	5	2	2	2	1	2	1	1	1	--	Chemical Solid State and Surface Research
		1	2	5	2	1	2	1	1	1	1	1	--	Physical and Theoretical Chemistry
		1	1	5	1	2	1	1	2	1	1	1	--	Analytical Chemistry, Method Development (Chemistry)
		1	1	5	2	2	1	1	2	1	1	1	--	Biological Chemistry and Food Chemistry
		2	2	5	2	2	2	1	3	1	2	1	--	Polymer Research
		1	2	5	3	3	2	2	2	1	1	1	--	Condensed Matter Physics
		1	2	5	4	2	2	2	2	1	1	2	1	Optics, Quantum Optics and Physics of Atoms, Molecules and Plasmas
		1	1	5	5	3	3	3	2	1	1	2	--	Particles, Nuclei and Fields
		1	2	5	3	3	2	2	2	1	1	1	--	Statistical Physics, Soft Matter, Biological Physics, Nonlinear Dynamics
		1	1	5	4	2	3	2	1	1	1	1	--	Astrophysics and Astronomy
		4	2	5	5	2	2	2	1	1	2	1	1	Mathematics
		1	2	4	1	1	2	2	1	1	1	1	1	Atmospheric Science, Oceanography and Climate Research
		2	2	5	2	1	1	1	1	1	1	1	--	Geology and Palaeontology
		1	2	4	2	3	2	2	1	1	1	1	--	Geophysics and Geodesy
		1	2	5	1	3	1	1	1	1	1	1	--	Geochemistry, Mineralogy and Crystallography
		1	1	5	1	3	2	2	1	1	1	1	--	Geography
	1	1	5	1	2	1	1	1	1	1	1	--	Water Research	

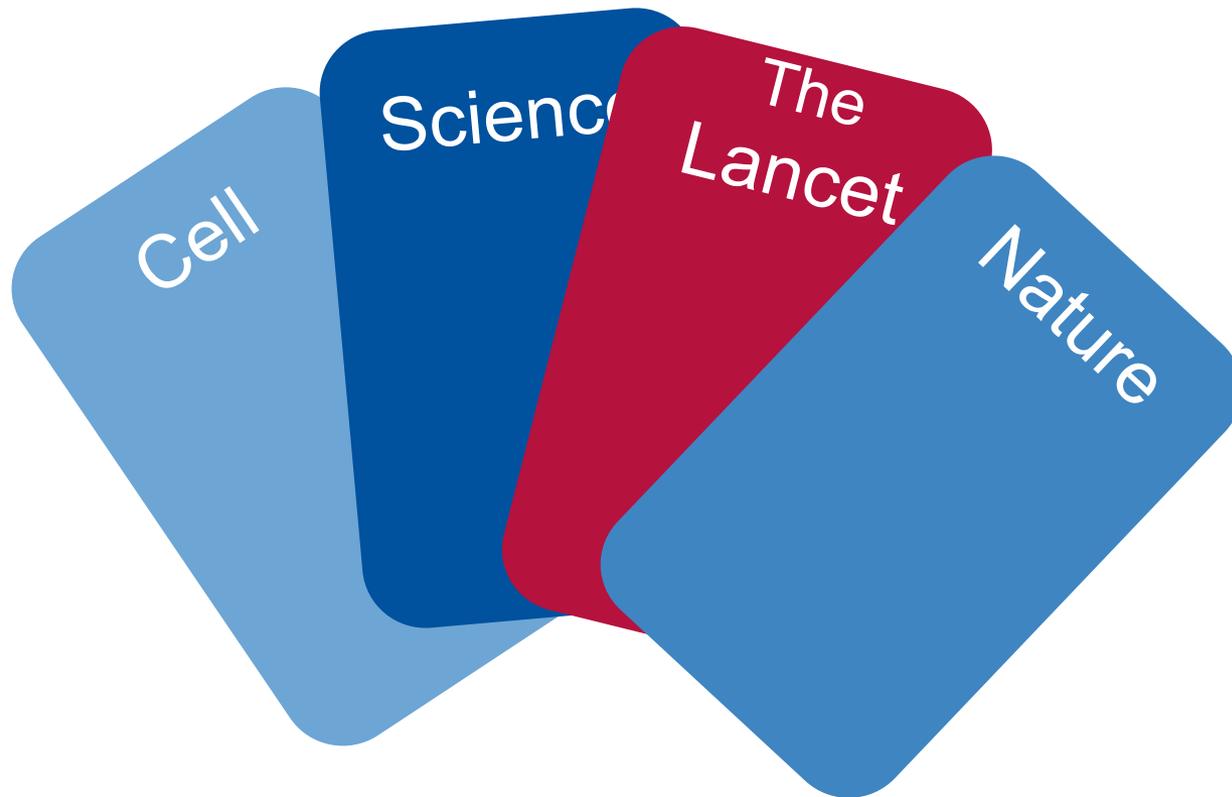
DFG Review Boards: Shares of Publication Types

Engineering Sciences

	Monographs	Anthologies	Journal articles	Pre-prints	Non publisher publications	Data packages	Software/code	Patents	Audio-visual media	Images/ graphs	Alternative publication types	Other	DFG Review Board
Engineering Sciences	1	2	4	1	2	1	1	2	1	1	2	--	Production Technology
	2	2	3	1	1	2	2	2	1	1	1	3	Mechanics and Constructive Mechanical Engineering
	1	1	5	2	4	4	4	5	2	2	1	--	Process Engineering, Technical Chemistry
	1	1	5	2	4	4	4	5	2	2	1	--	Heat Energy Technology, Thermal Machines, Fluid Mechanics
	1	2	5	2	2	2	2	3	1	1	1	--	Materials Engineering
	1	2	5	3	1	4	2	2	1	1	1	4	Materials Science
	1	1	3	1	2	2	2	2	2	2	1	--	Systems Engineering
	2	3	4	3	4	3	3	4	2	2	1	--	Electrical Engineering and Information Technology
	1	1	2	4	5	2	5	1	4	4	1	--	Computer Science
	1	1	2	4	5	2	5	1	4	4	1	--	Construction Engineering and Architecture

Assessing Research Quality

The role of publications



The incredible usefulness of Journal Publications

You can count and do calculations on them

Scopus-Search, 2019/05/19. **Figure out the better scientist:**

	Honjo, Tasuko Kyoto	Allison, James P. Houston
Documents	632	350
Cited by (No. of) documents	36.322	29.901
Co-authors	1.739	1.506
<i>h</i> -index	124	111
Total citations	63.187	49.622
Link	https://www.scopus.com/authid/detail.uri?authorId=36013822600	https://www.scopus.com/authid/detail.uri?authorId=7401475344

The incredible usefulness of Journal Publications

What is good Science?

The Nobel Prize in Physiology or Medicine 2018:

James P. Allison
Prize share: $\frac{1}{2}$

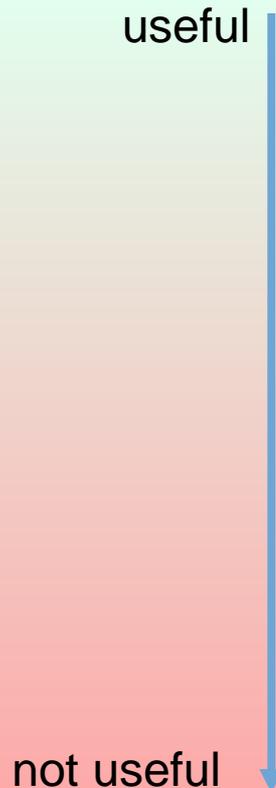
Tasuko Honjo
Prize share: $\frac{1}{2}$

<https://www.nobelprize.org/prizes/medicine/2018/summary/>

Journal and Publication metrics

What to use it for?

► Observed use of Journal /Publication Metrics for...

- 
- useful
- Research on Research
 - Monitoring purposes
 - Mapping Research
 - Identifying Funding Gaps
 - Measuring institutional Productivity
 - Measuring Researchers' Productivity
 - Calculating Investment in Institutions
 - Calculating Investment in Researchers
 - Tenuring and hiring of Researchers
 - Setting up Outcome Targets for Research
 - Optimizing individual Researchers' Reputation
- not useful

Non-useful application of journal/publication metrics

Setting bad incentives

Using publication metrics for...

setting up outcome
targets for research...

funding, tenuring and
hiring of researchers...

- results in strong **Incentives for Researchers** to optimize their individual reputation by optimizing their publication metrics
- results in strong **Incentives for Journals** to optimize their individual reputation by optimizing their journal metrics

Use of journal/publication metrics as research targets

Why it won't work

Charles Albert Eric Goodhart (1975):

"When a measure becomes a target, it ceases to be a good measure"¹

(Goodhart's Law)

¹ see: Marilyn Strathern (1997). 'Improving ratings': audit in the British University system. *European Review*, 5, pp 305-321 doi:10.1002/(SICI)1234-981X(199707)5:33.0.CO;2-4

Use of journal/publication metrics as research targets

Side effects imply on research integrity

Incentives to optimize an individual researcher's publication metrics result in further incentives for a spectrum of either undesirable behaviour or misconduct:

- ▶ Slicing of Publications
- ▶ Rushed Research, rushed Submissions
 - Incl. insufficient quality control, p-hacking etc.
- ▶ Non-adequate Choice of Publication Type/ Journal
 - Incl. delaying the publication process (Cascading)
- ▶ Non-justified Authorships
- ▶ Choice of Research Topic based on its Publishing-Potential
- ▶ ...

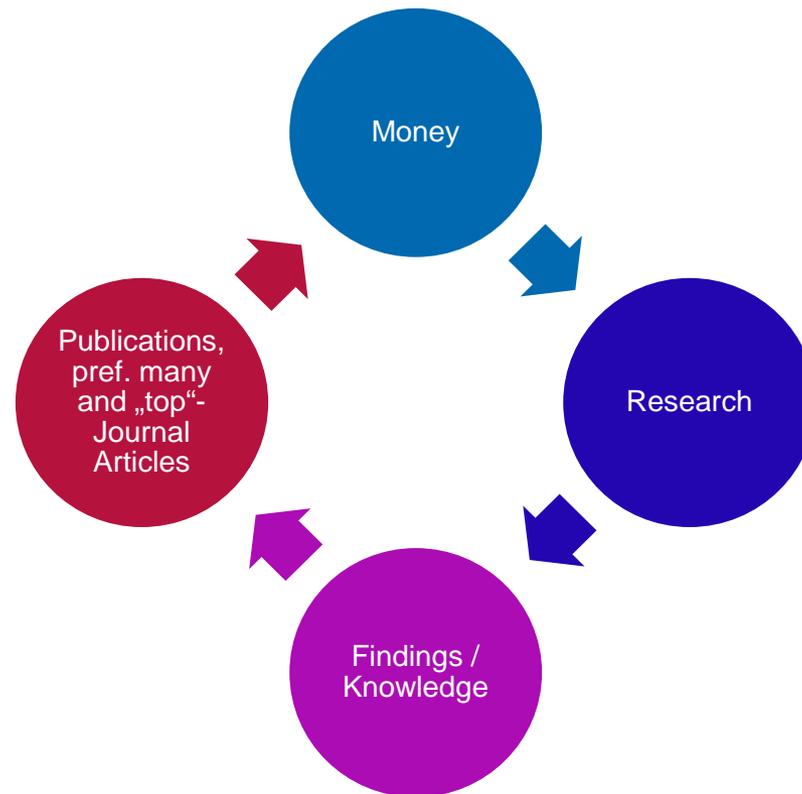
Quality over Quantity

It's the Content not the Package that counts

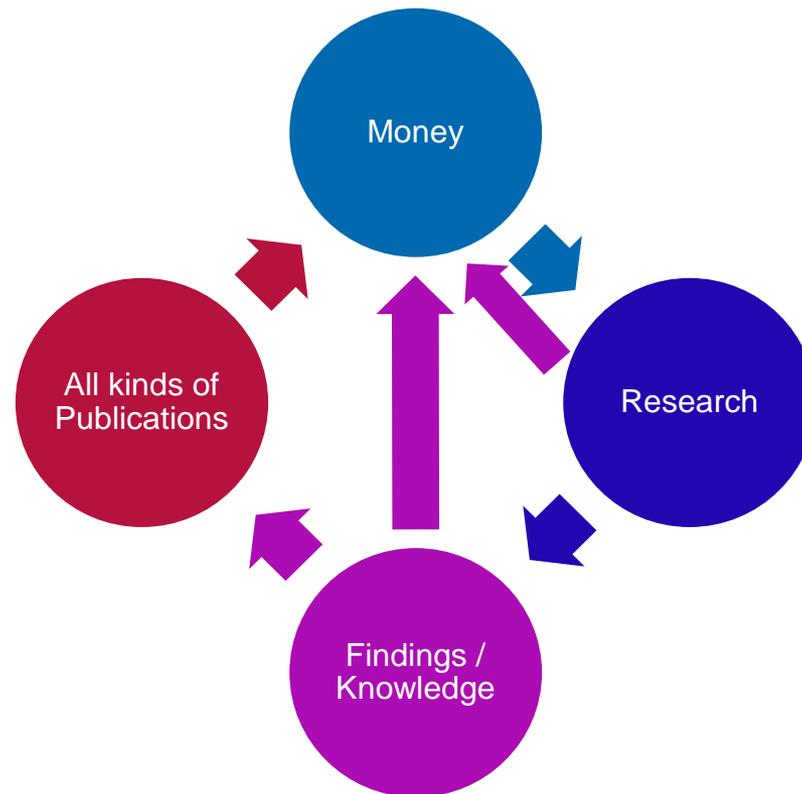
- ▶ What DFG (and other funders) should respond:
 - „Dear researcher, if you are trying to impress us, don't ,metric' us!
 - Keep doing science, keep trying to find answers to your big questions!
 - Keep publishing using the publication types and channels required to reach your target groups
 - We will figure out the quality of your project by assessing...
 - its **Originality** and the anticipated contribution to knowledge,
 - the **Objectives and Work Programme** by their working hypotheses and distinct topic,
 - the soundness of the **Preliminary Work**, the **Quality of Publications** and your **Qualifications** as the applicant,
 - your **Work and Research Environment**.
 - Don't *h*-index, slice, cascade or p-hack!
 - It's the research story!"

Assessment of Research Quality

Old View



Assessment of Research Quality Suggestion



Further information

- ▶ DFG: <https://www.dfg.de/en/index.jsp>
- ▶ Funding atlas: https://www.dfg.de/en/dfg_profile/facts_figures/funding_atlas/index.html
- ▶ GEPRIS – German Project Information System:
<http://gepris.dfg.de/gepris/OCTOPUS/?language=en&module=gepris>
- ▶ GERiT – German Research Institutions: <https://gerit.org/en/>