Priprema naučno-istraživačkog projekta

Etički principi i problemi u naučnom istraživanju

Prof. dr Ljiljana Damjanović-Vasilić

- Jedan od brojih uslova za uspešno bavljenje naukom je i obezbeđivanje finansijskih sredstava.

- To se postiže naučno-istraživačkim projektima. Prijave projekata se predaju na konkurse koje raspisuju odgovarajuće institucije, agencije ili kompanije koje finansiraju naučno-istraživački rad.

- Najveći broj naučnih projekata u Srbiji finansira Ministarstvo prosvete, nauke i tehnološkog razvoja.

Od ideje do implementacije

Official website of HORIZON2020:

http://ec.europa.eu/programmes/horizon2020/

PARTICIPANT PORTAL:

- **http://ec.europa.eu/research/participants/portal/desktop/en/home.html**
- 1-Funding opportunities (http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html)
- 2-How to participate (http://ec.europa.eu/research/participants/portal/desktop/en/funding/index.html)

EU POLICIES AND STRATEGIES

- Europe 2020 strategy (http://ec.europa.eu/europe2020/index_en.htm)
- EU policies in all areas (http://ec.europa.eu/policies/index_en.htm)
- The European Semester (http://ec.europa.eu/europe2020/making-it-happen/index_en.htm)

The European Semester (yearly cycle of economic policy coordination: detailed analysis of EU Member States' programmes of economic and structural reforms including recommendations for the next 12-18 months)

Saveti za pisanje uspešnog projekta*

- Predloženi ciljevi i plan rada su u saglasnosti sa pitanjima kojima se bavi određeni konkurs.
- Pratiti strukturu projekta definisanu uputstvom za podnosioce projekta.
- Biti maksimalno koncizan i precizan. Izbegavati opšte izjave.
- Konzorcijum partnera mora biti izvrstan i odgovarajući za postavljene zadatke.
- Ne treba da ima previše ciljeva i pokazati kako se planira njihova realizacija.

- Dok se piše predlog projekta imati na umu evaluatora i evaluatorski formular.
- Odabrati najbolje partnere i imati iskusnog koordinatora.
- Svaki deo formulara za projekte tretirati kao da je najvažniji.
- Razmišljati o prezentaciji projekta i koristiti tabele za objašnjenje složenog koncepta.
- Pročitati projekat više puta i korigovati štamparske i druge greške.
- Potruditi se da evaluator oseti vaš entuzijazam. Pored odlične ideje koja je osnova uspešnog projekta istraživači moraju tu ideju da “prodaju” evaluatorima.
- Projekat treba da odgovara potrebama onoga ko raspisuje konkurs, odnosno onoga ko finansira projekat.

*Source: Hyperion LTD; European Commission

GUIDE FOR APPLICANTS

Marie Skłodowska-Curie Actions

Innovative Training Networks (ITN)
Call Identifier: H2020-MSCA-ITN-2015
Closing Date: 13 January 2015 at 17:00:00
(Brussels local time)

Date of publication: 2 September 2014
Version Number: 2015.2

The Marie Skłodowska-Curie Actions in Horizon 2020

The Marie Skłodowska-Curie Actions (MSCA) aim to support the career development and training of researchers – with a focus on innovation skills – in all scientific disciplines through international and intersector mobility.

The MSCA are expected to finance around 65,000 researchers between 2014 and 2020, including 25,000 doctoral candidates. The Actions will address several objectives of the Europe 2020 strategy, including the Innovation Union flagship initiative. This states that the EU will need at least one million new research jobs if it is to reach the target of spending 3% of EU GDP on research and development by 2020.

By funding excellent research and offering attractive working conditions, the MSCA offer high quality professional opportunities open to researchers of any age, nationality or discipline.

The 2015 Marie Skłodowska-Curie Actions are:

- **Innovative Training Networks (ITN)**
  Innovative doctoral-level training providing a range of skills in order to maximise employability
- **Individual Fellowships (IF)**
  Support for experienced researchers undertaking mobility between countries, and also to the non-academic sector
- **Research and Innovation Staff Exchange (RISE)**
  International and intersectoral collaboration through the exchange of research and innovation staff
- **Co-funding of regional, national and international programmes (COFUND)**
  Co-financing high-quality fellowship or doctoral programmes with transnational mobility

The Coordination and Support Action **European Researchers' Night (NIGHT)**, funded under the MSCA, is a Europe-wide public event to stimulate interest in research careers, especially among young people.

Guides for Applicants for all of the MSCA can be found on the Participant Portal at: http://ec.europa.eu/research/participants/portal

The MSCA website can be found at:
http://ec.europa.eu/research/mariecurieactions/

This Guide is based on the rules and conditions contained in the legal documents relating to Horizon 2020 (in particular the Horizon 2020 Framework Programme and Specific Programme, the Rules for Participation, and the Work Programmes), all of which can be consulted via the Participant Portal.

Annex 5 – Part B Template

START PAGE

MARIE SKŁODOWSKA-CURIE ACTIONS

Innovative Training Networks (ITN)
Call: H2020-MSCA-ITN-2015

PART B

"PROPOSAL ACRONYM"

This proposal is to be evaluated as:

[ETN] [EID] [EJD]
[delete as appropriate]

LIST OF PARTICIPANTS

Please provide a list of the consortium's participants (both beneficiaries and partner organisations) indicating the legal entity, the department carrying out the work and the scientist-in-charge of the project.

For non-academic beneficiaries, please provide additional data as indicated in the table below.

Consortium Member	Legal Entity Short Name	Academic (tick)	Non-academic (tick)	Awards Doctoral Degrees (tick)	Country	Dept./ Division / Laboratory	Scientist-in-Charge	Role of Partner Organisation[8]
Beneficiaries								
- NAME								
Partner Organisations								
- NAME								

Data for non-academic beneficiaries:

Name	Location of research premises (city / country)	Type of R&D activities	No. of full-time employees	No. of employees in R&D	Web site	Annual turnover[9] (in Euro)	Enterprise status (Yes/No)	SME status[10] (Yes/No)

Note that:

- Any inter-relationship between different participating institutions or individuals (e.g. family ties, shared premises or facilities, joint ownership, financial interest, overlapping staff or directors, etc.) **must** be declared and justified **in this part of the proposal**;
- The information in the table for non-academic beneficiaries **must be based on current data, not projections**;
- The data provided relating to the capacity of the participating institutions will be subject to verification during the grant preparation phase.

[8] For example, delivering specialised training courses, hosting secondments, etc.
[9] Defined as the total value of sales of goods and services during the last accounting period.
[10] As defined in Commission Recommendation 2003/361/EC

Table 1.2 a Recruitment Delive

Researcher No.	Recruiting Participant (short name)
1.	
2.	
3.	
...	
Total	

Table 1.2 b Main Network-Wide Contribution of Ben

	Main Training Events & Conferences
1	
2	
3	
4	

1.3 *Quality of the supervision*

Required sub-headings:

- Qualifications and supervision exp
- Quality of the joint supervision EJD).

To avoid duplication, the role and profile in the "Participating Organisations" table

The following section of the European C to supervision:

Supervision

Employers and/or funders should ensu whom Early-Stage Researchers can professional duties, and should inform th

Such arrangements should clearly def sufficiently expert in supervising re experience, expertise and commitment appropriate support and provide for procedures, as well as the necessary fee

Dissemination, Exploitation of Results

All researchers should ensure, in compliance with their contractual arrangements, that the results of their research are disseminated and exploited, e.g. communicated, transferred into other research settings or, if appropriate, commercialised. Senior researchers, in particular, are expected to take a lead in ensuring that research is fruitful and that results are either exploited commercially or made accessible to the public (or both) whenever the opportunity arises.

3. Implementation

3.1 *Overall coherence and effectiveness of the work plan*

Required **sub-headings**:

- Work Packages description (please include table 3.1a);
- List of major deliverables *(*please include table 3.1b*)*, including the awarding of doctoral degrees, where applicable[14];
- List of major milestones (please include table 3.1c)
- Fellow's individual projects, *(*please include table 3.1d*);*
- Gantt Chart, including secondment plan (please use template below)[15].

Due date: The schedule should indicate the **number of months** elapsed from the start of the project (Month 1).

Table 3.1 a Description of Work Packages

WP Number		Start Month – End Month
WP Title	*(e.g. including Research, Training, Management, Communication and Dissemination…)*	
Lead Beneficiary		
Objectives		
Description of Work and Role of Partners *(possibly broken down into tasks), lead partner and role of participants*		
Description of Deliverables *(brief description and month of delivery)*		

Table 3.1 b Deliverables List

A **deliverable** is a distinct output of the project, meaningful in terms of the project's overall objectives and constituted by a report, a document, a technical diagram, a software, training, conference, etc.

[14] This could also be after the end of the project
[15] Note that although the Gantt Chart will be assessed under section 3, the chart itself does not count towards the page limit and should be included under section 4.

osed interaction between the participating

ipants to the research and training programme
cipants
researchers to different (research) environments,
y thereof

and innovation-related human resources, nditions to realise the potential of individuals reer perspectives

n the impact of the research and training on the

turing doctoral/early-stage research training l and to strengthening European innovation e potential for:

academic sector to the doctoral / research training
nplementation mode and research domain)

ng sustainable joint doctoral degree structures (for

proposed measures for communication and lts

lic engagement strategy of the project
earch results
nd intellectual property

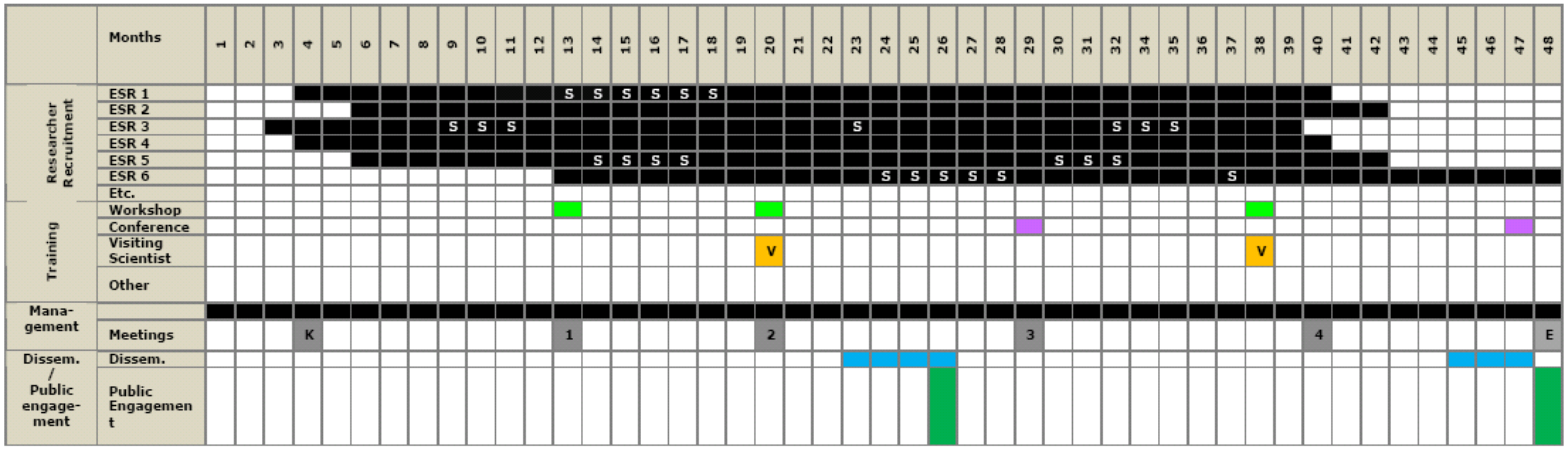
ove must be included in the corresponding

uropean Charter for Researchers refer specifically
emination:

hat their research activities are made known to
y that they can be understood by non-specialists,
understanding of science. Direct engagement with
's to better understand public interest in priorities
l also the public's concerns.

4. Gantt Chart

Reflecting ESR recruitments, secondments, training events, management and dissemination / public engagement activities



S = Secondment[24]

K = Kick-off meeting

E = End of project

[24] **30% secondment rule**: Each recruited researcher can be seconded to other beneficiaries and /or to partner organisations for a duration of up to 30% of his/her recruitment period (above the "minimum" requirements of the EJD and EID modes).

5. Participating Organisations

All organisations (whether beneficiaries or partner organisations) must complete the appropriate table below. Complete one table of maximum one page per beneficiary and half a page per partner organisation (minimum font size: 9).

For **beneficiaries**:

Beneficiary Legal Name	
General Description	
Role and Commitment of key persons (including supervisors)	*Including names, title and the foreseen extent of involvement - in percentage of full-time employment - of the key scientific staff who will be involved in the research, training and supervision*
Key Research Facilities, Infrastructure and Equipment	*Demonstrate that each team has sufficient facilities and infrastructure to host and/or offer a suitable environment for supervising the research and training of the recruited Early-Stage Researchers*
Independent Research premises	*Please explain the status of the beneficiary's research facilities – i.e. are they owned by the beneficiary or rented by it? Are its research premises wholly independent from other beneficiaries and/or partner organisations in the consortium?*
Previous Involvement in Research and Training Programmes	*Detail any relevant EU, national or international research and training projects in which the partner has previously participated*
Current Involvement in Research and Training Programmes	*Detail any relevant EU, national or international research and training projects in which the partner is currently participating*
Relevant Publications and/or Research / Innovation Product	*Max. 5*

For **partner organisations:**

Partner Organisation Legal Name	
General description	
Key Persons and Expertise	
Key Research Facilities, Infrastructure and Equipment	
Previous and Current Involvement in Research and Training Programmes	
Relevant Publications and/or Research / Innovation Product	*Max. 3*

6. Ethics Issues

All research activities in Horizon 2020 must respect fundamental ethics principles, including those reflected in the Charter of Fundamental Rights of the European Union.[25] These principles include the need to ensure the freedom of research and the need to protect the physical and moral integrity of individuals and the welfare of animals.

Research ethics is of crucial importance for all scientific domains. Informed consent and confidentiality are as important for a sociological study as they are for clinical research.

All proposals considered for funding will be submitted to an Ethics Review. The Ethics Review is the core of the H2020 Ethics Appraisal scheme, which concerns all proposals and projects, and also includes the Ethics Checks and Ethics Audit that can be initiated during the project implementation.

In this context, please be aware that it is the applicants' responsibility to identify any potential ethical issues, to handle the ethical aspects of their proposal, and to detail how they plan to address them.

If any ethics issues have been entered in the ethical issues checklist in Part A of the proposal, then an ethics self-assessment must be included in this section. For more details, please refer to the "H2020 How to complete your Ethics Self-Assessment" guide.

The self-assessment in this section must:

1) Describe how the proposal meets the national legal and ethics requirements of the country or countries where the tasks raising ethical issues are to be carried out.

Should the proposal be selected for funding, applicants will be required to provide the following documents, if they are already in their possession:

- The ethics committee opinion required under national law
- The document that is mandatory under national law notifying activities raising ethics issues or authorising such activities

If these documents are not in English, applicants must also submit an English summary of them (containing, if available, the conclusions of the committee or authority concerned).

If it is planned to request these documents specifically for the proposed project, the request must contain an explicit reference to its title.

[25] Charter of Fundamental Rights of the European Union, 2000/C 364/01. See also: http://www.europarl.europa.eu/charter/default_en.htm

Informacije o časopisima

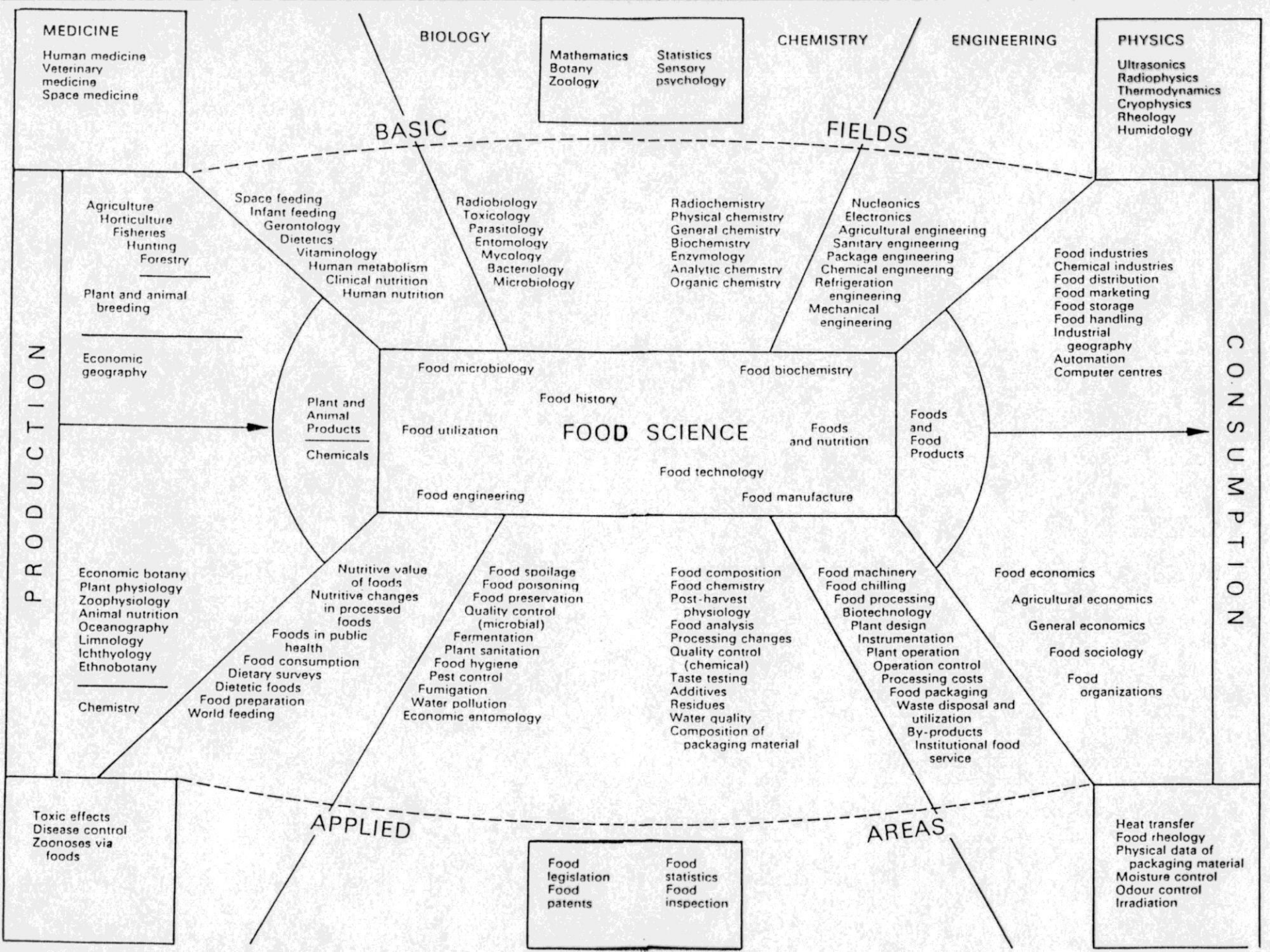
- Potreba da se rezultati naučno-istraživačkog rada distribuiraju pojavila se u XVII veku sa formiranjem prvih naučnih društava:

- 1635: Académie Française
- 1645: Royal Society of London
- 1652: Deutsche Akademie der Naturforscher
- 1666: Académie des Sciences de Paris

- Prvi časopis izlazi 1666. godine "Proceedings of the Royal Society of London".

- Do razvoja brojnih naučnih oblasti dolazi u XIX veku.

- Rezultat – veliki broj naučnih časopisa i u okviru pojedinih naučnih oblasti.
- Nemoguće je pročitati sve radove iz jedne specifične oblasti.
- Zato je važno osmisliti strategiju za uspešno pronalaženje najvažnijih radova.


MEDICINE
Human medicine
Veterinary medicine
Space medicine
BIOLOGY
Mathematics
Botany
Zoology
Statistics
Sensory psychology
CHEMISTRY
ENGINEERING
PHYSICS
Ultrasonics
Radiophysics
Thermodynamics
Cryophysics
Rheology
Humidology
BASIC
FIELDS
PRODUCTION
CONSUMPTION
Agriculture
Horticulture
Fisheries
Hunting
Forestry
Plant and animal breeding
Economic geography
Space feeding
Infant feeding
Gerontology
Dietetics
Vitaminology
Human metabolism
Clinical nutrition
Human nutrition
Radiobiology
Toxicology
Parasitology
Entomology
Mycology
Bacteriology
Microbiology
Radiochemistry
Physical chemistry
General chemistry
Biochemistry
Enzymology
Analytic chemistry
Organic chemistry
Nucleonics
Electronics
Agricultural engineering
Sanitary engineering
Package engineering
Chemical engineering
Refrigeration engineering
Mechanical engineering
Food industries
Chemical industries
Food distribution
Food marketing
Food storage
Food handling
Industrial geography
Automation
Computer centres
Plant and Animal Products
Chemicals
Food microbiology
Food biochemistry
Food history
Food utilization
FOOD SCIENCE
Foods and nutrition
Food technology
Food engineering
Food manufacture
Foods and Food Products
Economic botany
Plant physiology
Zoophysiology
Animal nutrition
Oceanography
Limnology
Ichthyology
Ethnobotany
Chemistry
Nutritive value of foods
Nutritive changes in processed foods
Foods in public health
Food consumption
Dietary surveys
Dietetic foods
Food preparation
World feeding
Food spoilage
Food poisoning
Food preservation
Quality control (microbial)
Fermentation
Plant sanitation
Food hygiene
Pest control
Fumigation
Water pollution
Economic entomology
Food composition
Food chemistry
Post-harvest physiology
Food analysis
Processing changes
Quality control (chemical)
Taste testing
Additives
Residues
Water quality
Composition of packaging material
Food machinery
Food chilling
Food processing
Biotechnology
Plant design
Instrumentation
Plant operation
Operation control
Processing costs
Food packaging
Waste disposal and utilization
By-products
Institutional food service
Food economics
Agricultural economics
General economics
Food sociology
Food organizations
Toxic effects
Disease control
Zoonoses via foods
APPLIED
AREAS
Food legislation
Food patents
Food statistics
Food inspection
Heat transfer
Food rheology
Physical data of packaging material
Moisture control
Odour control
Irradiation


European Review
Agricultural
FOOD
Journal of
International
Food & Agribusine
Marketing
British Foo
Appetite
Journal on
MEAT SCIENC
RETAILING
AND
CONSUMER
SERVICES
Supply Chain
Management
Journal of
Animal Science

Vrste časopisa

- Primarni časopisi - samo oni koji redovno izlaze; više izdanja u toku godine; izdavači naučna društva ili kompanije
  - The Journal of Physical Chemistry A
  - Applied Catalysis B: Environmental
- Sekundarni časopisi (baze podataka)
  - Web of Science
  - Scopus
  - SciFinder
- Tercijarni časopisi
  - Magazini
  - Revijalni časopisi
  - Monografije

Kako naći određeni časopis?

- Biblioteke
- ISI Web of Knowledge

  - ISI - Institute for Scientific Information; kupljen od strane Thomson Corporation, danas Thomson ISI; preko 14000 časopisa
- Web of Science
- GoogleScholar
- Baze podataka
- Urednici

Odakle početi?

Značaj naslova rada i apstrakta

- Redosled koraka pri pretrazi baza podataka: ključne reči → naslovi → apstrakti → rad

- Naslovi i apstrakti su uvek dostupni; radovi nisu uvek dostupni

- Sugestije za pisanje rada:
  - koristiti ključne reči u naslovu
  - apstrakt ne treba da bude suviše kratak
  - pri pisanju rada imati na umu metodologiju pretrage kojom se do rada dolazi

- Kovanica “publish or perish”

Pretraga baza podataka se vrši korišćenjem ključnih reči i bulovih operatora:

- AND, OR, NOT
- *: (na pr. nitr* -> nitrogen, nitrate, nitrite, …)

- ?: (na pr. favour, favor, favo?r)

  (mineralise – mineralize – minerali?e)

- **DOI -** ‘digital object identifier’
  digitalni identifikator objekata

- Jedinstveno fiksno identifikaciono oruđe na WWW

Na pr.
DOI: 10.1006/jmbi.1998.2354

10.1006 = baza podataka
jmbi = ime časopisa
1998 = godina
2354 = članak

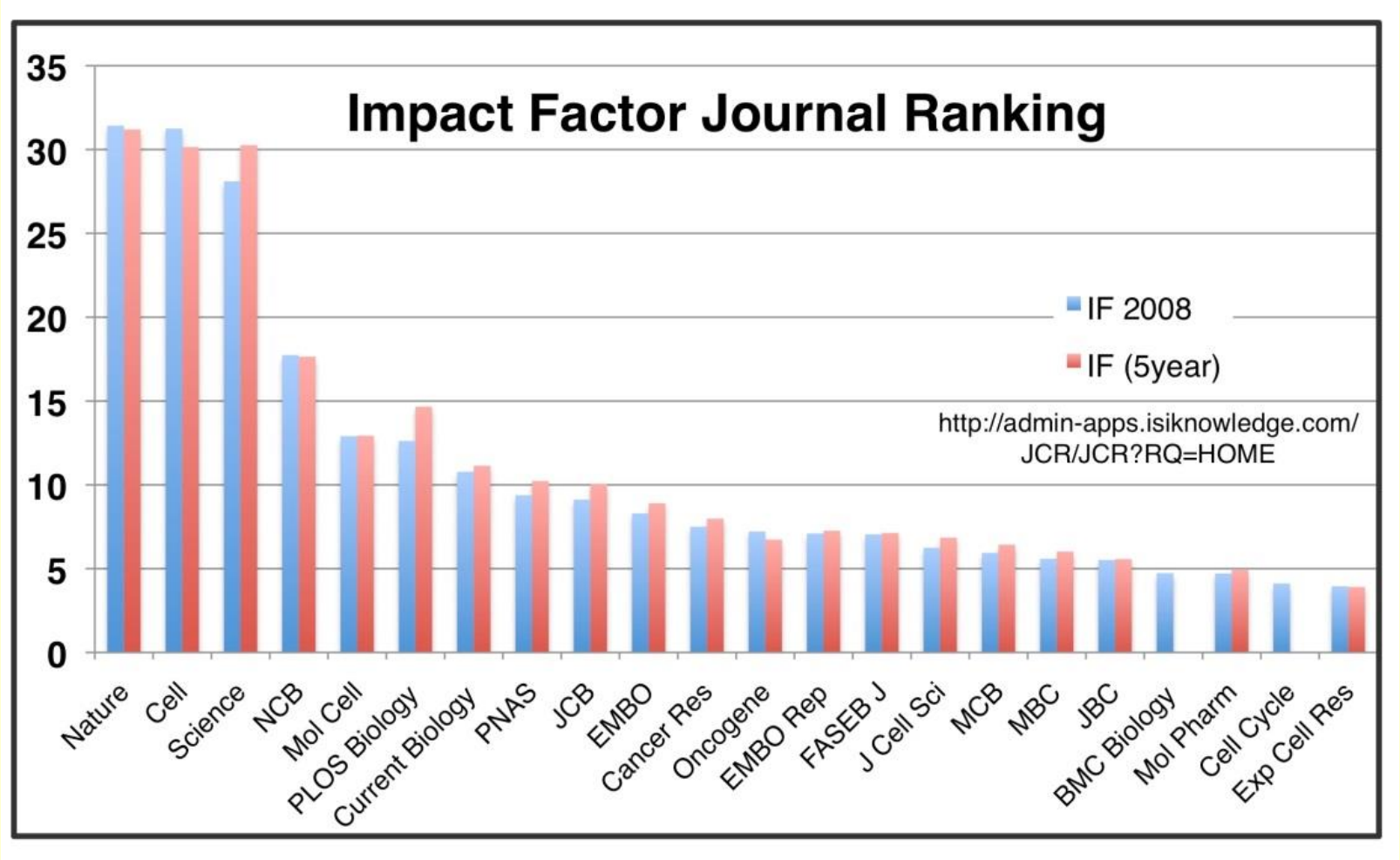
Impakt faktor (IF)

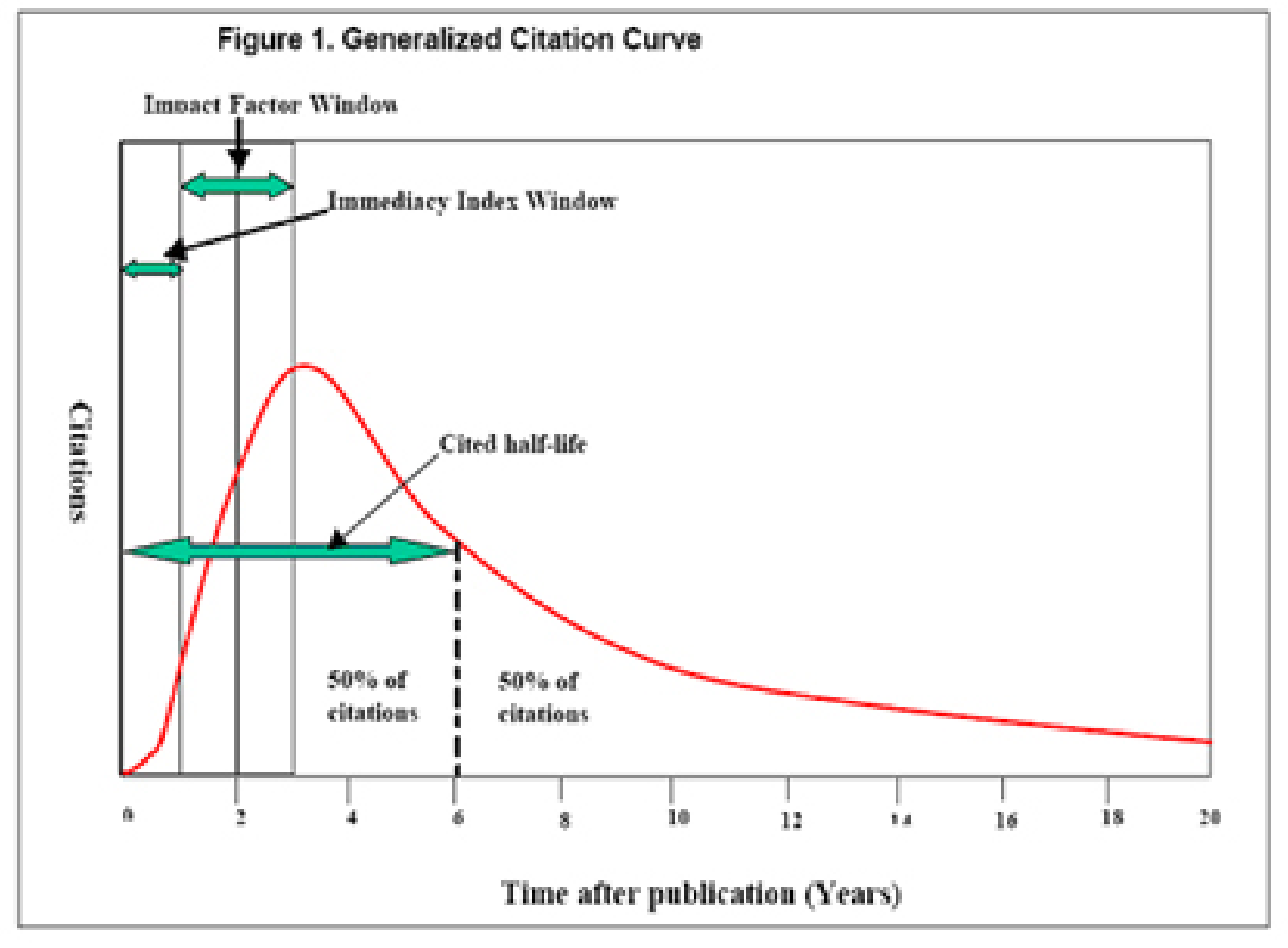
- Broj radova: P
- Citati (sa ili bez autocitata): C
- Impakt factor (faktor uticaja): C/P
- Impakt faktor se računa za određeni vremenski period (jedna godina, pet godina)
- Značaj časopisa se može proceniti na osnovu vrednosti impakt faktora

Rangiranje časopisa

Impakt faktori za 2015. godinu

- Journal of American Chemical Society 13,038
- Water Research 5,991
- Electrochimica Acta 4,803
- Journal of Physical Chemistry. Part A: Molecules, Spectroscopy, Kinetics, Environment and General 2,883
- Journal of Serbian Chemical Society 0,970


Impact Factor Journal Ranking
35
30
25
20
15
10
5
0
IF 2008
IF (5year)
http://admin-apps.isiknowledge.com/JCR/JCR?RQ=HOME
Nature
Cell
Science
NCB
Mol Cell
PLOS Biology
Current Biology
PNAS
JCB
EMBO
Cancer Res
Oncogene
EMBO Rep
FASEB J
J Cell Sci
MCB
MBC
JBC
BMC Biology
Mol Pharm
Cell Cycle
Exp Cell Res

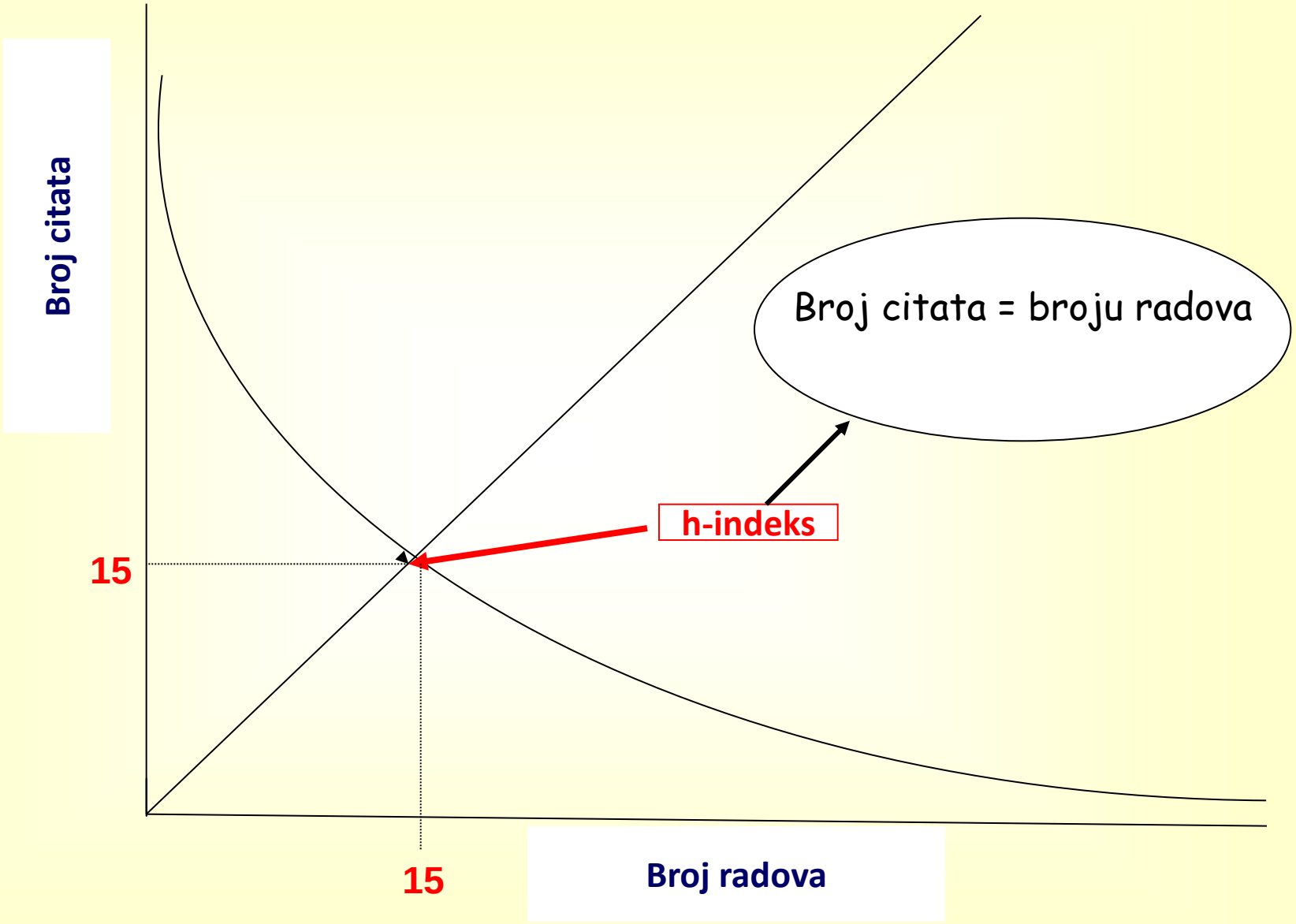


Elsevier, 2013

h-indeks - pokazatelj naučne uspešnosti istraživača

- Uveo ga je profesor dr Jorge E. Hirsch, fizičar sa kalifornijskog Univerziteta u San Dijegu 2005. godine.

- h-indeks uzima u obzir naučnu produktivnost istraživača, merenu brojem objavljenih radova, i uticaj, mereno brojem citata tih radova u drugim radovima.


Broj citata
Broj citata = broju radova
h-indeks
15
15
Broj radova

Primer 1: istraživač je objavio 100 radova i ima h-indeks 15. To znači da 15 radova ima barem 15 citata, a ostali radovi imaju manje citata.

Primer 2:

- Najcitiraniji rad ima 60 citata
- Drugi najcitiraniji rad ima 35 citata
- Treći najcitiraniji rad ima 18 citata
- Četvrti najcitiraniji rad ima 2 citata

h-indeks = 3

On-line publikacije
Open access radovi

- **Prednosti**

  Odmah nakon recenzija premanentno dostupni svima

  Mogućnosti dodavanja više dopunskog materijala: pored standradnih dodataka video materijal, 3D efekti u arhitekturi, itd.

- Directory of Open Access Journals (DOAJ)
  16. 01. 2017. – 9494 časopisa

On-line publikacije
Open access radovi

- **Nedostaci**

  Novčana naknada koju plaćaju autori, institucije ili agencije.

  Elsevier: 500-5000 USD

  U izvesnim slučajevima moguće je dobiti umanjenje sume za plaćanje.

Zloupotrebe

- Jeffrey Beall, bibliotekar Univerziteta Kolorado u Denveru je prvi napravio listu “potencijalnih i verovatnih” tzv. “predatorskih časopisa” 2010. godine.

- Malo izmenjena imena renominarnih časopisa: Journal of Polymer Science izdaje Wiley od 1946. godine. Predatorski časopis nosi ime American Journal of Polymer Science.

- Beall-ova lista je od 17. 01. 2017. godine off-line po ličnoj odluci autora.

Zloupotrebe

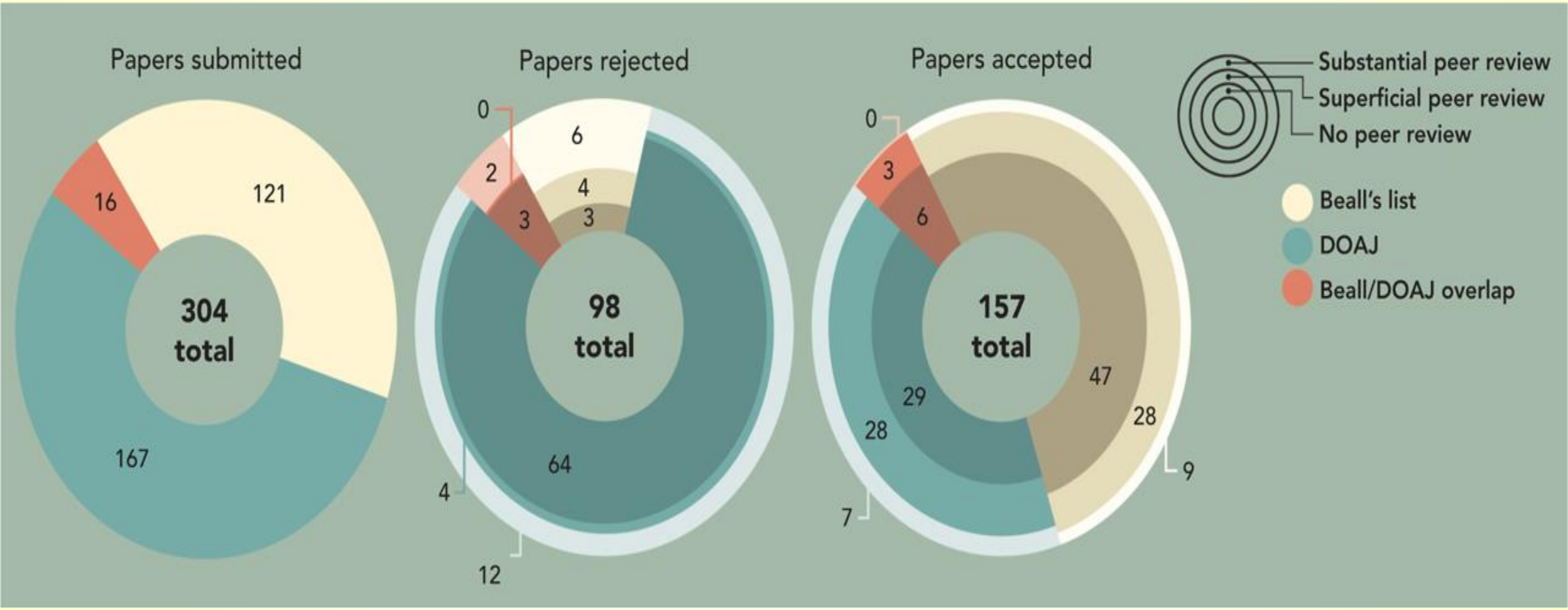
- Članak u casopisu Science “Who's Afraid of Peer Review?” (Ko se plaši recenzija?), autor John Bohannon

http://science.sciencemag.org/content/342/6154/60.full

Lokacije izdavača časopisa, urednika i bankovnih računa su često na različitim kontinentima

J Bohannon Science 2013;342:60-65

Manji broj časopisa je sproveo pravu recenziju pri čemu su identifikovani nedostaci rada



J Bohannon Science 2013;342:60-65

Etika u istraživanju

- Naučna istraživanja imaju veliki značaj za pojedinca, društvo i globalni razvoj.
- Zbog toga je od izuzetne važnosti poštovanje etičkih pravila u istraživanju.
- Etika: set principa koji omogućavaju razlikovanje prihvatljivog i neprihvatljivog ponašanja.

Etička odgovornost istraživača

- Svaki naučnik ima etičku obavezu da istražuje radi znanja i da teži unapređenju kvaliteta života.

- Zahtevi koje naučnik treba da ispunjava:
  - kompetentnost
  - tačna prezentacija rezultata
  - iskreno navođenje izvora
  - odavanje priznanja drugim naučnicima
  - razmatranje posledica svog istraživanja
  - javno nastupanje u vezi tema za koje je ekspert.

Osnovni etički principi u istraživanju

- **Iskrenost**

  Iskreno prezentovati podatke, rezultate, metode i procedure i status publikacije. Ne izmišljati, falsifikovati i pogrešno interpretirati podatke.

- **Objektivnost**

  Izbegavati pristrasnost i predubeđenja pri postavci eksperimenta, analizi podataka, interpretaciji podataka, recenzijama, itd.

- **Integritet**

  Ispunjavati svoja obećanja i ugovore, ponašati se iskreno, imati konzistentnost u ponašanju i razmišljanju.

- **Oprez**

  Izbegavati greške usled nepažnje i nemar. Pažljivo i kritički ispitati svoj rad. Pažljivo voditi laboratorijski dnevnik sa svim detaljima eksperimenta i čuvati korespondenciju sa časopisima i agencijama za finansiranje.

- **Otvorenost**

  Deliti svoje podatke, rezultate, ideje, oruđa i resurse. Biti otvoren za kritiku i nove ideje.

- **Poštovanje intelektualne svojine**

- Poštovati patente, izdavačka prava i druge vidove intelektualne svojine.

- Ne koristiti nepublikovane podatke, metode ili rezultate bez dozvole.

- Nikada ne plagirati.

- **Poverljivost**

Zaštiti poverljivu komunikaciju kao što je rad ili projekat predat za publikovanje, lični podaci, trgovinske i vojne tajne i dosijei pacijenata.

- **Poštovanje kolega**

Poštovati kolege i tretirati ih fer.

- **Bez diskriminacije**

Izbegavati diskriminaciju među kolegama i studentima na osnovu pola, rase i drugih faktora koji nisu povezani sa njihovim naučnim kompetencijama i integritetom.

- **Društvena odgovornost**

Promovisanje dobrobiti društva kroz istraživanja, obrazovanje i javne nastupe.

- **Etička pitanja:**

  - dupliranje publikacija; dozvoljeno samo u izuzetnim slučajevima (pregledni članak)

  - konflikt interesa – isti materijal poslat u dva različita časopisa

  - osetljiv materijal – kako napraviti bombu

  - vlasništvo podataka

  - autorstvo

Autorstvo

- U velikom broj slučajeva nauči rad je rezultat saradnje između kolega i eksperata.

- Svaka osoba koje je na listi autora jednog načnog rada je značajno doprinela istraživanju i pisanju rada i mora biti spremna da preuzme odgovornost za sadržaj naučnog rada.

- Odgovornosti autora:

  - priprema istinitih, konciznih i tačnih informacija

  - rezultati istraživanja moraju biti sačuvani u formi koja omogućava analizu i proveru

  - svi podaci se moraju čuvati za kasnije provere

  - rad mora sadržati dovoljno detalja i referenci ka javnim izvorima da bi omogućio da drugi istraživači ponove rezultate.

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- Dva važna etička principa u procesu recenziranja su:

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  - zaštita intelektualne svojine

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- Savremena tehnologija utiče na etičke principe i zahteva preispitivanje postojećih i uvođenje novih principa i smernica.

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- Fabrikovanje rezultata – izmisliti podatake ili rezultate, zatim ih sačuvati i publikovati.

- Falsifikovanje rezultata – manipulacija materijalom za istraživanja, opremom ili eksperimentalnim postupkom, ili menjanje, izostavljanje podataka tako da istraživanje nije pravilno prikazano.

Jan Hendrik Schön – fizičar; publikacije u najeminentnijm časopisima (Science, Nature), dobitnik prestižnih nagrada; **rezultati izmišljeni**

Možda najveća prevara u fizici u poslednjih pedeset godina.

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