Giovanni de Girolamo
IRCCS Fatebenefratelli, Brescia

INTEGRARE PER INNOVARE: PONTI E BARRIERE TRA CLINICA E RICERCA

Figure 1-2 Scientific performance, excellence and collaboration – EU, US and China, 2022

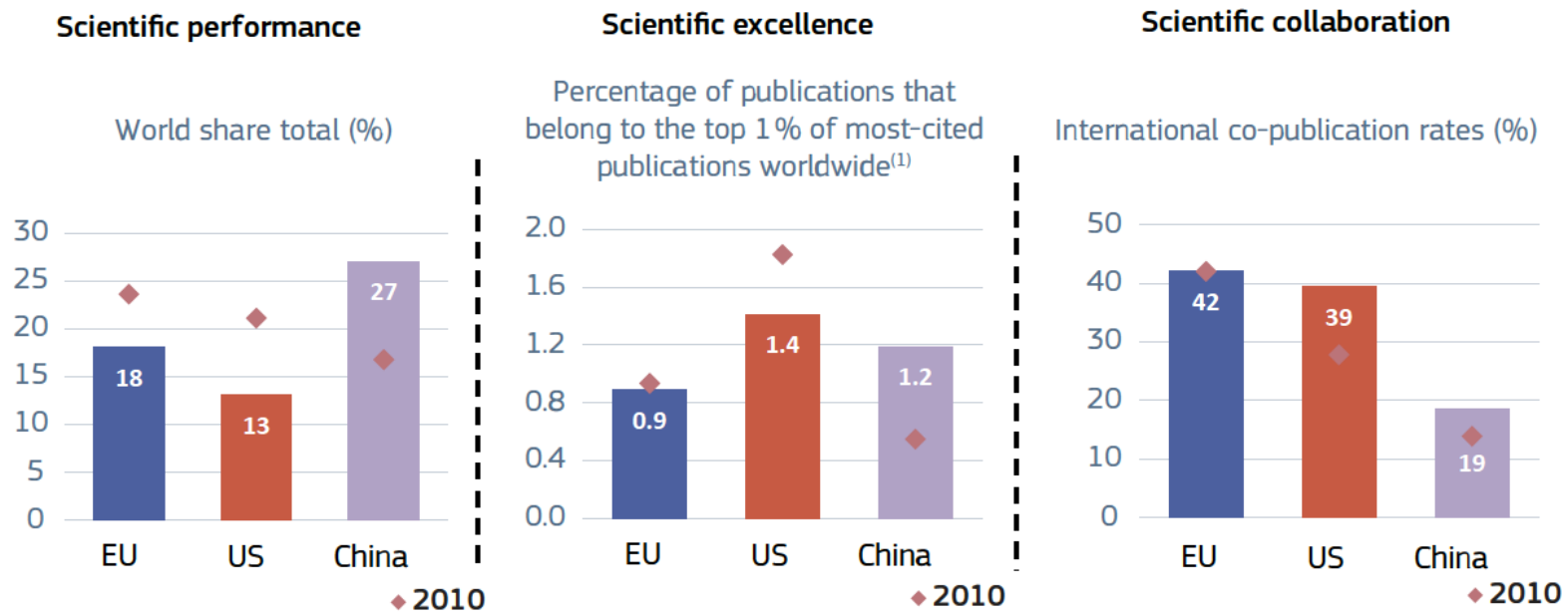


Figure 2.1-1 R&D expenditure in billion EUR, 2000-2021

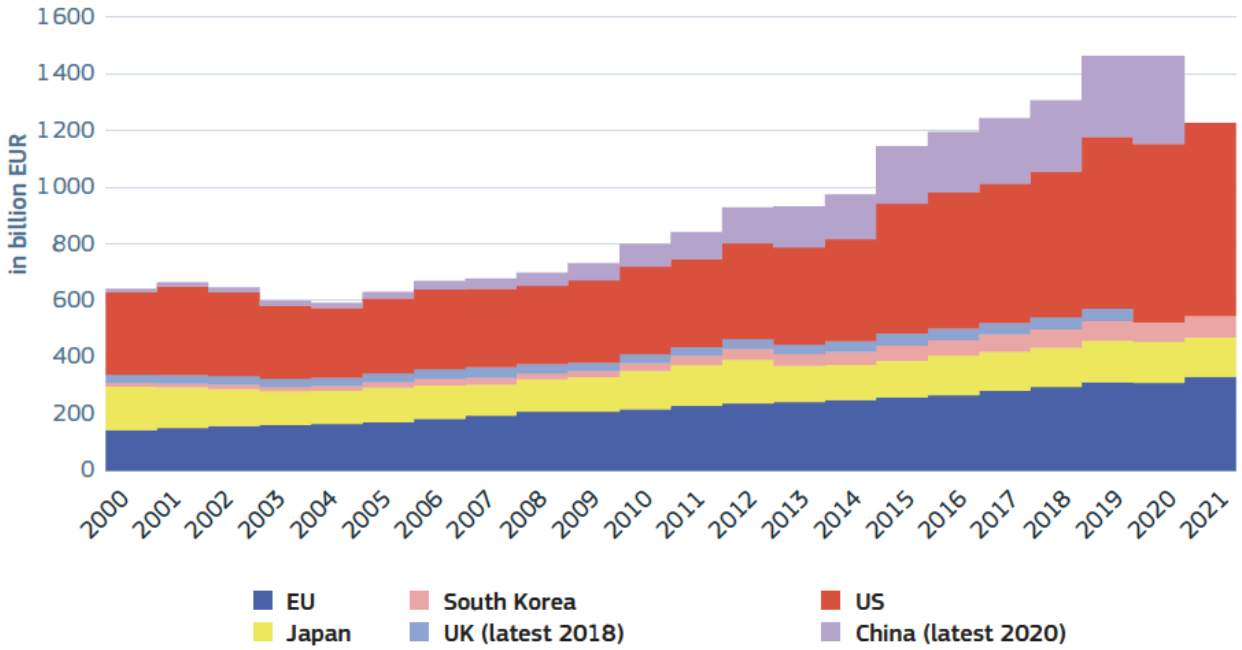


Figure 2.1-2 Gross expenditure on R&D as a percentage of GDP (R&D intensity), 2015-2022

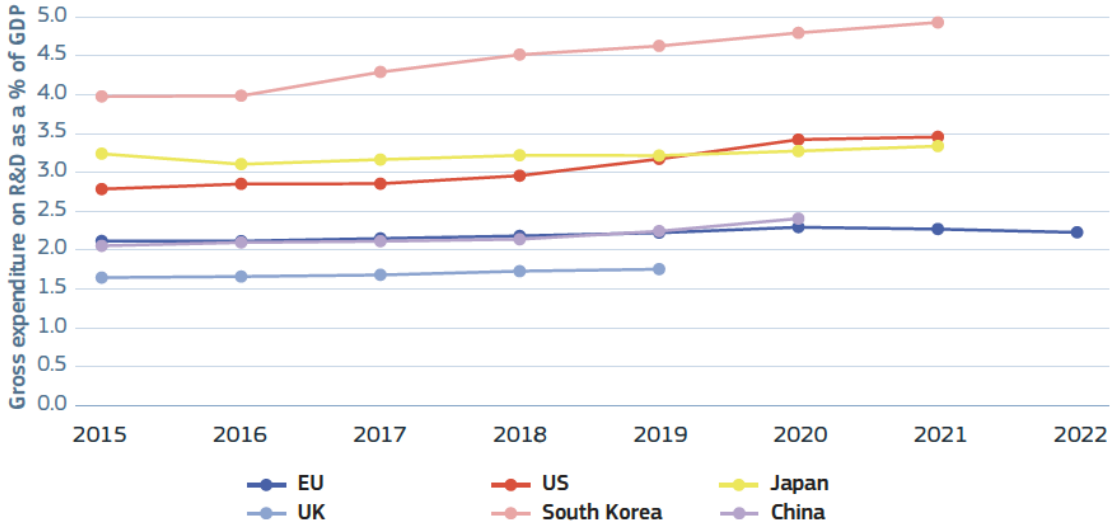


Figure 3.1-1 Global share of scientific publications[1], 2022

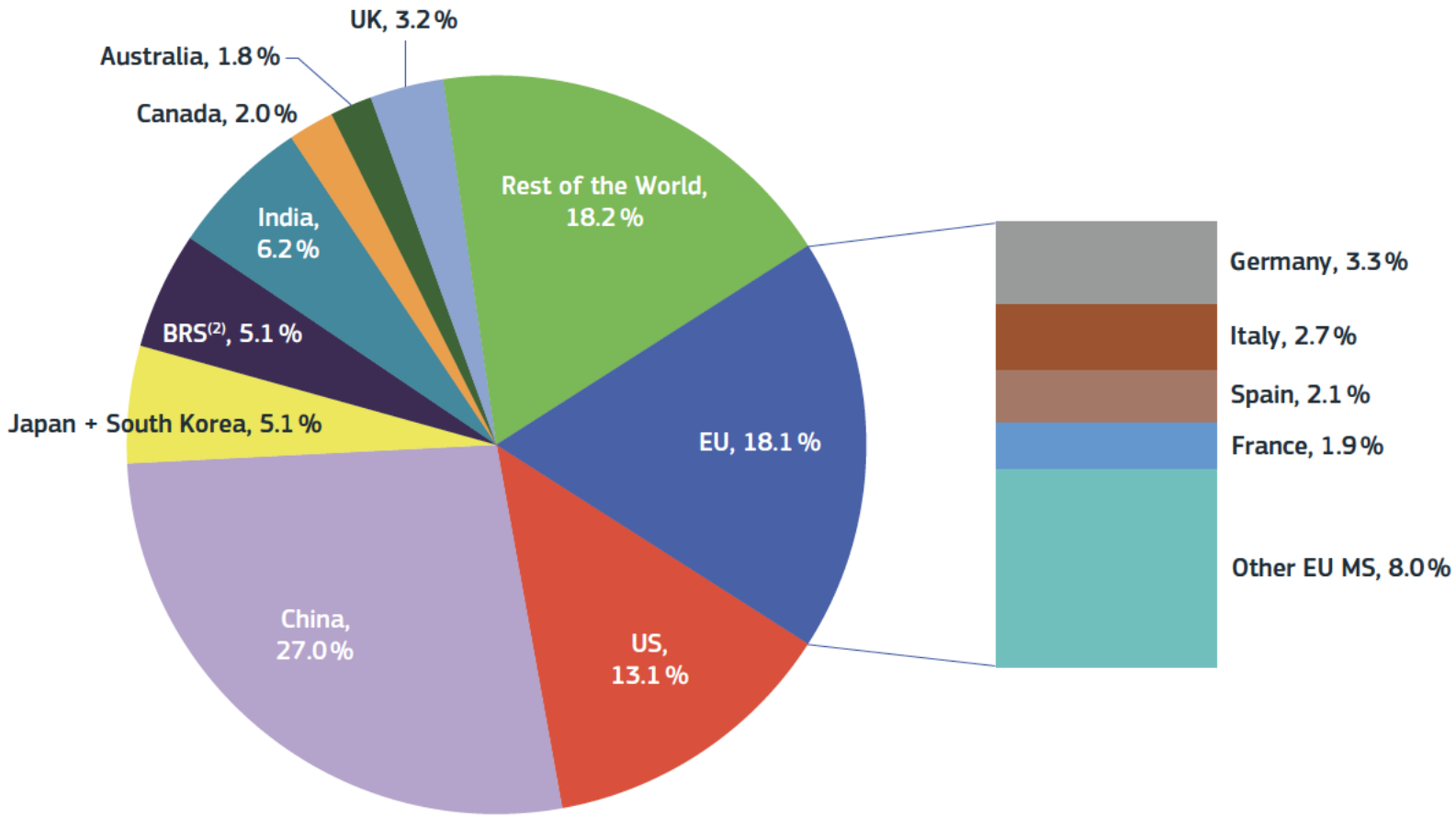
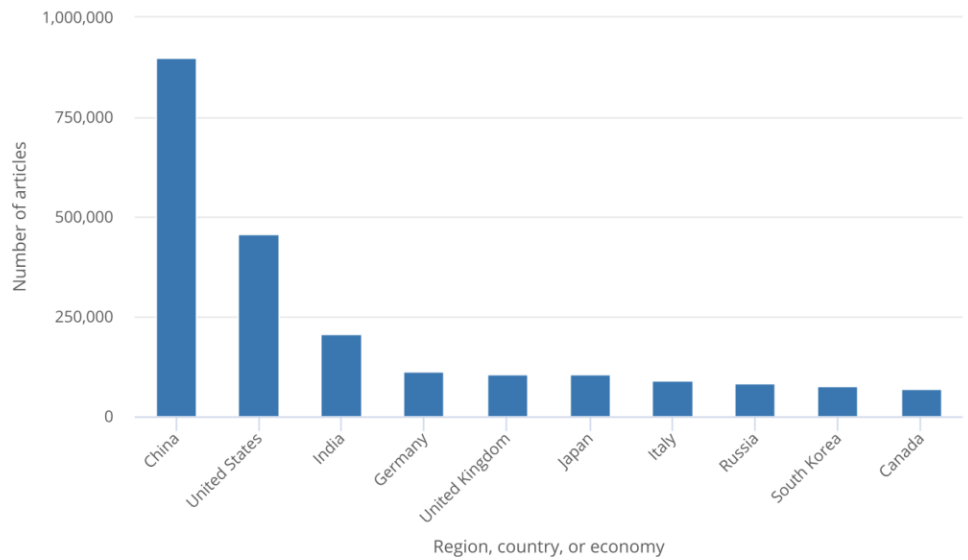


Figure PBS-2

S&E publications for 10 leading regions, countries, or economies: 2022



Note(s):
Article counts refer to publications from a selection of conference proceedings and peer-reviewed journals in S&E fields from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. Articles are credited on a fractional count basis (i.e., for articles produced by authors from different regions, countries, or economies, each region, country, or economy receives fractional credit on the basis of the proportion of its participating authors). Data by all countries, regions, and economies are available in Table SPBS-2.

Source(s):
National Center for Science and Engineering Statistics; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed April 2023.

Science and Engineering Indicators

Efficacy and Tolerability of Seven Antipsychotic Drugs in Acutely Ill Patients With Schizophrenia: A Randomized, Multicenter, Assessor-Blinded Trial

Guorui Zhao, B.Med.,[1] Yaoyao Sun, Ph.D.,[1] Yuyanan Zhang, Ph.D.,[1] Tianlan Lu, B.S.,[1] Zhe Lu, M.D.,[1] Zhewei Kang, M.D.,[1] Johannes Schneider-Thoma, M.D.,[2] Wuxiang Xie Ph.D.,[3] Yang Yang, Ph.D.,[1] Jing Guo, M.Ed.,[1] Yunqing Zhu, M.Sc.,[1] Rui Yuan, B.Med.,[1] Junyuan Sun, M.Med.,[1] Xiaoyang Feng, M.D.,[1] Yundan Liao, M.D.,[1] Dongxue Chen, M.S.Sc.,[1] Lingjiang Li, M.D.,[4] Tao Li, M.D.,[5,6] Fude Yang, M.D.,[7] Chuanyue Wang, M.D.,[8] Dai Zhang, M.D.,[1] Hao Yan, M.D.,[1] Stefan Leucht, M.D.,[2,9] Weihua Yue, M.D.,[1,10,11]; for the Schizophrenia in Non-Occidental Participants (SINO) Investigators

Objective: Antipsychotic drugs are the mainstay of schizophrenia treatment; yet, controversy persists regarding their relative efficacy and side effects, and guideline recommendations on efficacy differences are particularly vague. The aim of this trial was to compare seven antipsychotics in acutely ill patients with schizophrenia.

Methods: The authors performed a multicenter (32 hospitals), industry-independent, parallel, assessor-blinded, flexible-dosage randomized trial (Schizophrenia in Non-Occidental Participants). Eligible inpatients 18–45 years of age with schizophrenia experiencing acute exacerbation were recruited and randomized to 6 weeks of monotherapy with one of seven antipsychotic drugs: olanzapine, risperidone, quetiapine, aripiprazole, ziprasidone, perphenazine, and haloperidol.

Results: A total of 3,067 patients were randomized, of whom 82% completed follow-up. The mixed model indicated significant differences in the primary outcome percentage change in Positive and Negative Syndrome Scale (PANSS) score between the antipsychotics. At week 6, olanzapine and risperidone showed a significantly higher percentage change in PANSS score than aripiprazole, ziprasidone, and quetiapine (mean differences: 5.52–7.93) but not haloperidol or perphenazine. Olanzapine was associated with the highest risk of weight gain (relative risk: 1.44–3.22). Aripiprazole was associated with lower risk of hyperprolactinemia than all the other drugs (relative risks: 0.11–0.21). Ziprasidone and aripiprazole were associated with lower risks of weight gain and metabolic side effects. Haloperidol was associated with a higher risk of extrapyramidal symptoms than all other drugs (relative risks: 0.13–0.61). Aripiprazole was least sedating (relative risks: 0.30–0.39). Olanzapine and risperidone showed lower all-cause discontinuation rates than ziprasidone and haloperidol (hazard ratios: 0.61–0.73).

Conclusions: This trial fills important knowledge gaps in acute antipsychotic treatment of schizophrenia. It confirms hierarchies in efficacy and side effects of antipsychotics from related evidence.

Am J Psychiatry 2025; XX:1–12; doi: 10.1176/appi.ajp.20250111

Biological Psychiatry

Archival Report

Intimate Partner Violence During Pregnancy and Early Offspring Development: A Prospective Birth Cohort Study

Nan Jiang, Shuang-Shuang Ma, Ping Zu, Lei Zhang, Min Xu, Jing-Feng Bian, Ji-Rong Xu, Wei Luo, Hai-Xia Wang, Dao-Min Zhu, and Peng Zhu

ABSTRACT

BACKGROUND: Intimate partner violence (IPV) during pregnancy is linked to several unfavorable outcomes for both mothers and babies. However, few studies have examined its connections to early infant neurodevelopment, and the underlying processes of these connections remain unclear.

METHODS: Our research was conducted within a prospective birth cohort of 3007 mother-child pairs from March 2018 to July 2023. Participants were followed from pregnancy until the offspring were 12 months old. We collected data on IPV during pregnancy, prenatal depression, postpartum depression, umbilical cord blood inflammatory level, and the Ages and Stages Questionnaire, Third Edition (ASQ-3) and used multiple logistic regression analysis to examine the relationship between IPV during pregnancy and children's neurodevelopmental delay.

RESULTS: In our study cohort, 9.8% of pregnant women experienced IPV during pregnancy, and 8.7% experienced psychological violence. Psychological violence was associated with increased relative risks of failure in communication, problem-solving, and personal-social domains of the ASQ-3. The corresponding 95% CIs were 1.95 (1.24–3.07), 2.10 (1.25–3.52), and 1.97 (1.29–3.02), respectively. Moreover, IPV during pregnancy combined with depression further exacerbated these risks. In addition, 19.6% of the association between IPV during pregnancy and prenatal depression was mediated by cord blood inflammatory indices in relation to the ASQ-3 failure risk.

CONCLUSIONS: This prospective birth cohort study indicates that the significant negative impact of psychological violence on the offspring's neurodevelopmental delay depends on the intensity of psychological stress, with umbilical cord blood inflammation being a potential underlying biological mechanism.

https://doi.org/10.1016/j.biopsych.2025.03.020

Figure 3.1-5 EU share of publications(1) by scientific field, 2012 and 2022

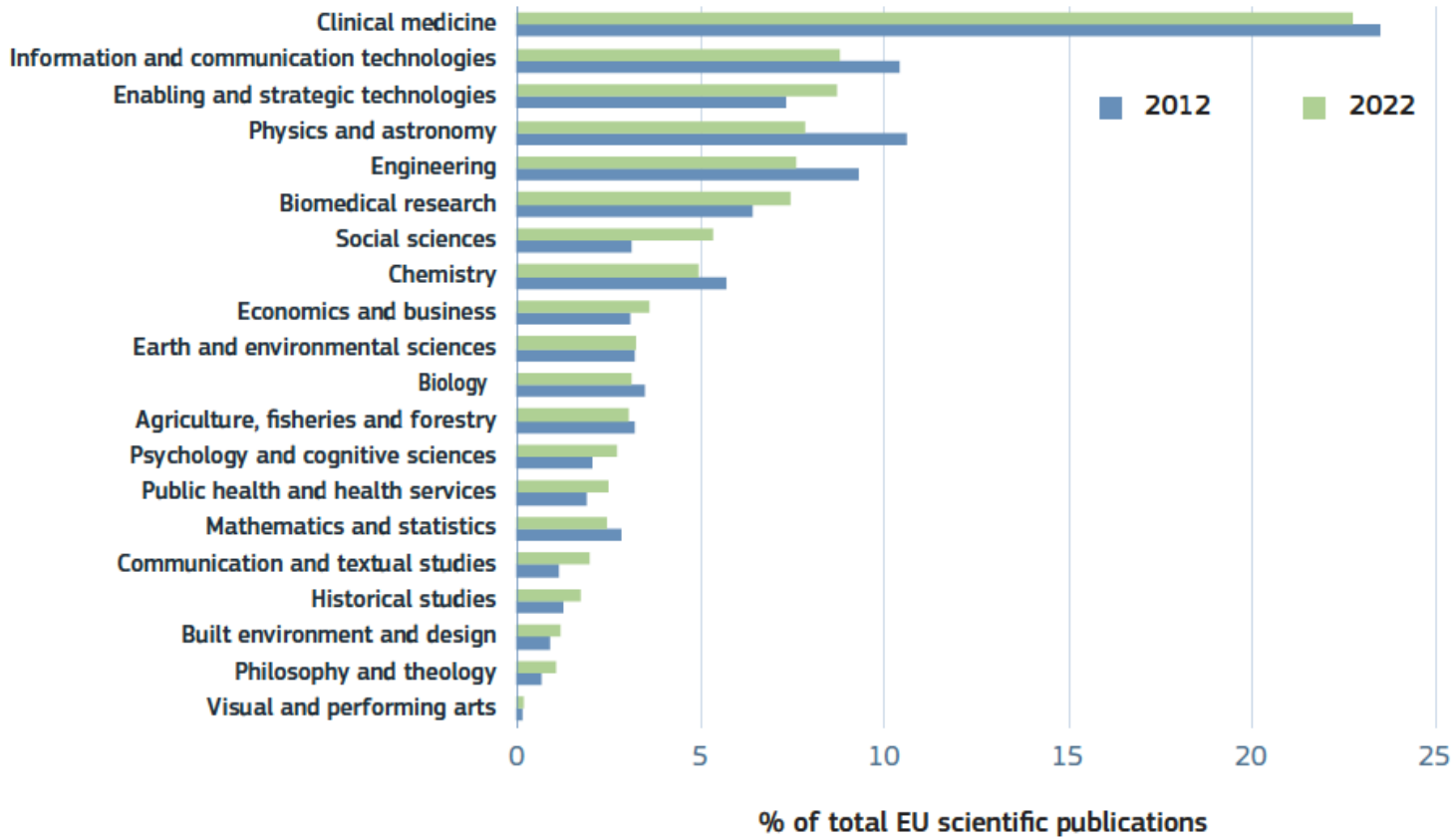


Figure 3.1-6 US share of publications[1] by scientific field, 2012 and 2022

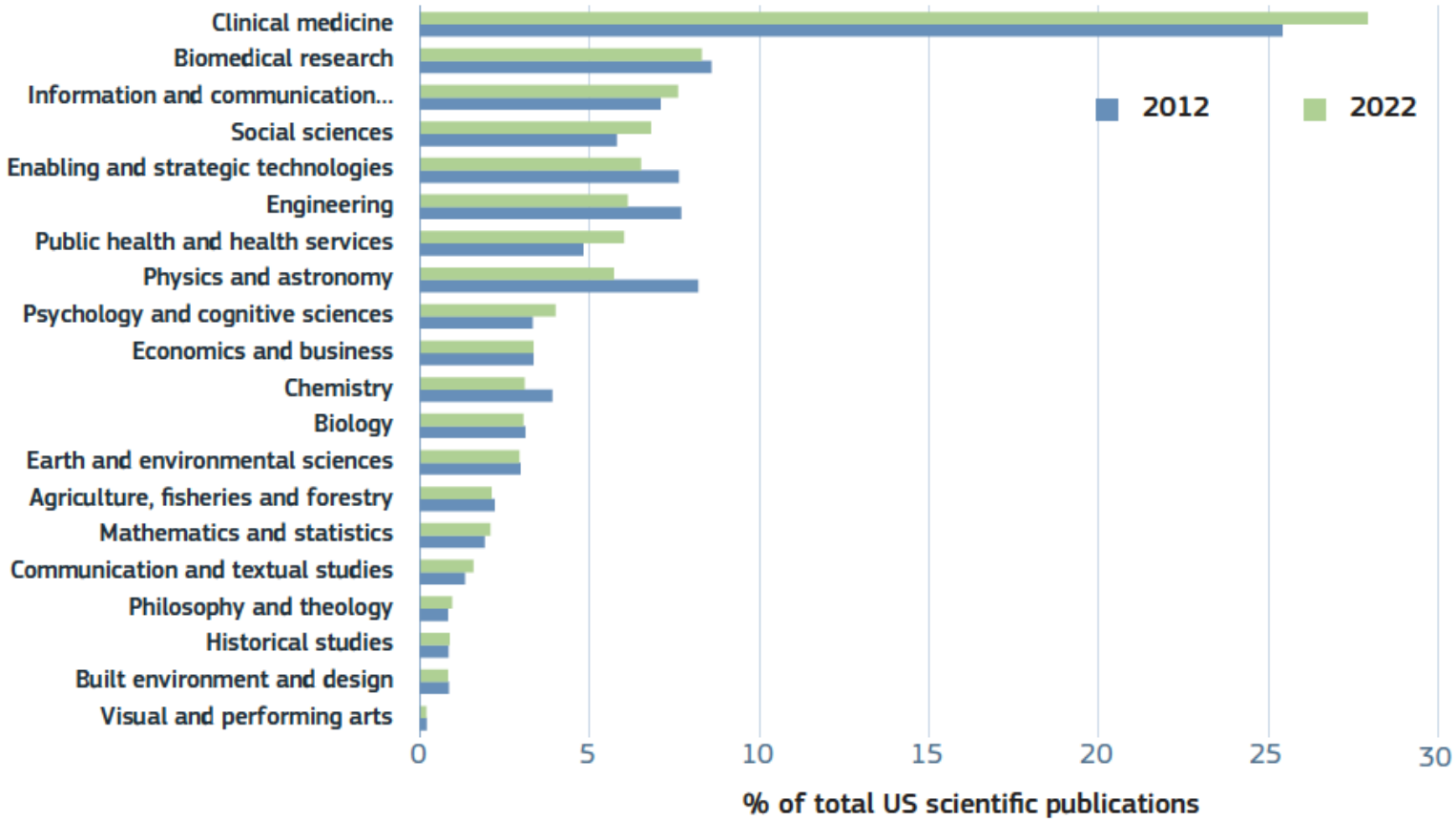
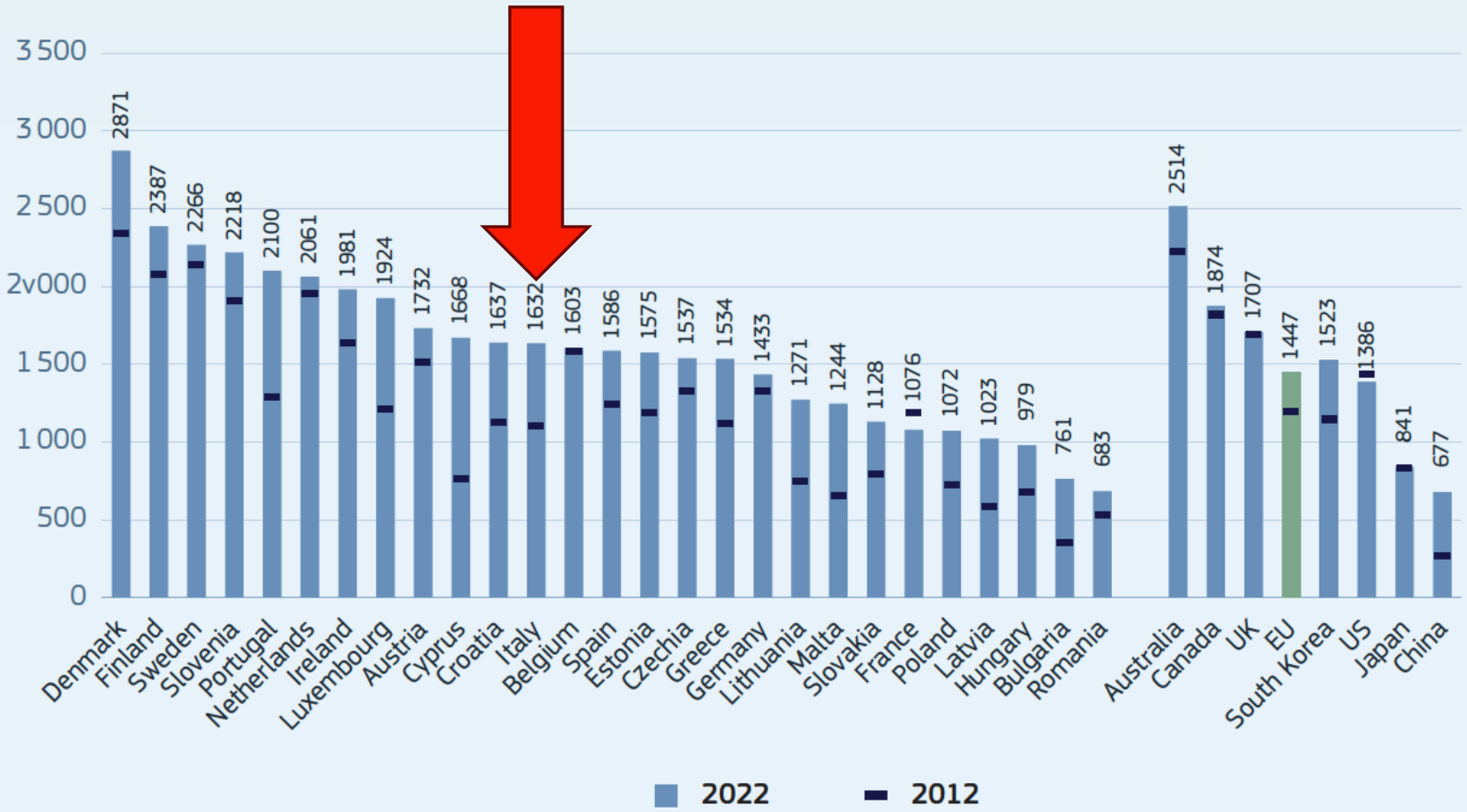


Figure 3.1-9 Publications per million population, 2012 and 2022



Liu et al. Research Integrity and Peer Review (2020) 5:3
https://doi.org/10.1186/s41073-019-0089-z
Research Integrity and Peer Review

RESEARCH Open Access

The acceptability of using a lottery to allocate research funding: a survey of applicants

Mengyao Liu[1], Vernon Choy[1], Philip Clarke[2], Adrian Barnett[3], Tony Blakely[4] and Lucy Pomeroy[1*]

Abstract

Background: The Health Research Council of New Zealand is the first major government funding agency to use a lottery to allocate research funding for their Explorer Grant scheme. This is a somewhat controversial approach because, despite the documented problems of peer review, many researchers believe that funding should be allocated solely using peer review, and peer review is used almost ubiquitously by funding agencies around the world. Given the rarity of alternative funding schemes, there is interest in hearing from the first cohort of researchers to ever experience a lottery. Additionally, the Health Research Council of New Zealand wanted to hear from applicants about the acceptability of the randomisation process and anonymity of applicants.

Methods: This paper presents the results of a survey of Health Research Council applicants from 2013 to 2019. The survey asked about the acceptability of using a lottery and if the lottery meant researchers took a different approach to their application.

Results: The overall response rate was 39% (126 of 325 invites), with 30% (76 of 251) from applicants in the years 2013 to 2018, and 68% (50 of 74) for those in the year 2019 who were not aware of the funding result. There was agreement that randomisation is an acceptable method for allocating Explorer Grant funds with 63% ($n = 79$) in favour and 25% ($n = 32$) against. There was less support for allocating funds randomly for other grant types with only 40% ($n = 50$) in favour and 37% ($n = 46$) against. Support for a lottery was higher amongst those that had won funding. Multiple respondents stated that they supported a lottery when ineligible applications had been excluded and outstanding applications funded, so that the remaining applications were truly equal. Most applicants reported that the lottery did not change the time they spent preparing their application.

Conclusions: The Health Research Council's experience through the Explorer Grant scheme supports further uptake of a modified lottery.

Keywords: Peer review, Research funding, Lottery

mBio EDITORIAL

Research Funding: the Case for a Modified Lottery

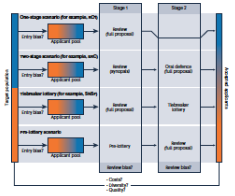
Ferric C. Fang, Arturo Casadevall

Comment
nature human behaviour

Rethink funding by putting the lottery first

Finn Luebber, Sören Krach, Marina Martinez Mateo, Frieder M. Paulus, Lena Rademacher, Rima-Maria Rahal & Jule Specht

Research funding determines the course of science and thus shapes future knowledge. However, funding allocation is inherently biased, non-optimal and costly. We present a Shiny app that simulates the effects of funding scenarios on costs, diversity and quality. We advocate a lottery at the beginning to promote inclusion.



Studies in History and Philosophy of Science 76 (2019) 13–23
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Studies in History and Philosophy of Science
journal homepage: www.elsevier.com/locate/shpsa
ELSEVIER

Mavericks and lotteries

Shahar Avin
Centre for the Study of Existential Risk, University of Cambridge, Cambridge, UK

HIGHLIGHTS

- A novel analytic synthesis of arguments that support random allocation as an alternative to grant peer review.
- Review of policy implementations of science funding that formally include a random selection element.
- A novel comparison of these policies with the policy-relevant characteristics of the arguments in the literature.

ABSTRACT

In 2013 the Health Research Council of New Zealand began a stream of funding titled 'Explorer Grants', and in 2017 changes were introduced to the funding mechanisms of the Volkswagen Foundation 'Experiment!' and the New Zealand Science for Technological Innovation challenge 'Seed Projects'. All three funding streams aim at encouraging novel scientific ideas, and all now employ random selection by lottery as part of the grant selection process. The idea of funding science by lottery emerged independently in several corners of academia, including in philosophy of science. This paper reviews the conceptual and institutional landscape in which this policy proposal emerged, how different academic fields presented and supported arguments for the proposal, and how these have been reflected (or not) in actual policy. The paper presents an analytical synthesis of the arguments presented to date, notes how they support each other and shape policy recommendations in various ways, and where competing arguments highlight the need for further analysis or more data. In addition, it provides lessons for how philosophers of science can engage in shaping science policy, and in particular, highlights the importance of mixing complementary expertise: it takes a (conceptually diverse) village to raise (good) policy.

and cultures at the University of California, Los Angeles.

Righting a wrong

The painted wooden sarcophagi are of a type known as stola coffins, after a set of red straps depicted on them. The garment would have been worn by people connected to the Amun priesthood, one of ancient Egypt's centres of power, dating back to the tenth century BC.

Stola coffins have intricate designs, which include complicated religious iconography, as well as details of personal information about the deceased. Cooney says it is crucial that the mummies have been found in their coffins, "potentially correcting, if not reversing, a century of colonial academic wrongs by Egyptologists who separated coffins from mummies and didn't or wouldn't study the human remains properly".

"Those interested in coffins will be able to look at the type of wood, varnish and paints;

SCIENCE FUNDERS GAMBLE ON GRANT LOTTERIES

A growing number of research agencies are assigning money randomly.

By David Adam

Albert Einstein famously insisted that God does not play dice. But the Health Research Council of New Zealand does. The agency is one of a growing number of funders that award grants partly through random selection. Earlier this year, for example, David Ackerley, a biologist at Victoria University of Wellington, received NZ$150,000 (US$96,000) to develop new ways to eliminate cells – after his number came up in the council's annual lottery.

"We didn't think the traditional process was

Review

Peer review of grant applications: what do we know?

Simon Wessely

THE LANCET • Vol 352 • July 25, 1998

Feature

ARE GROUNDBREAKING SCIENCE DISCOVERIES BECOMING HARDER TO FIND?

Researchers are arguing over whether 'disruptive' or 'novel' science is waning — and how to remedy the problem. **By David Matthews**

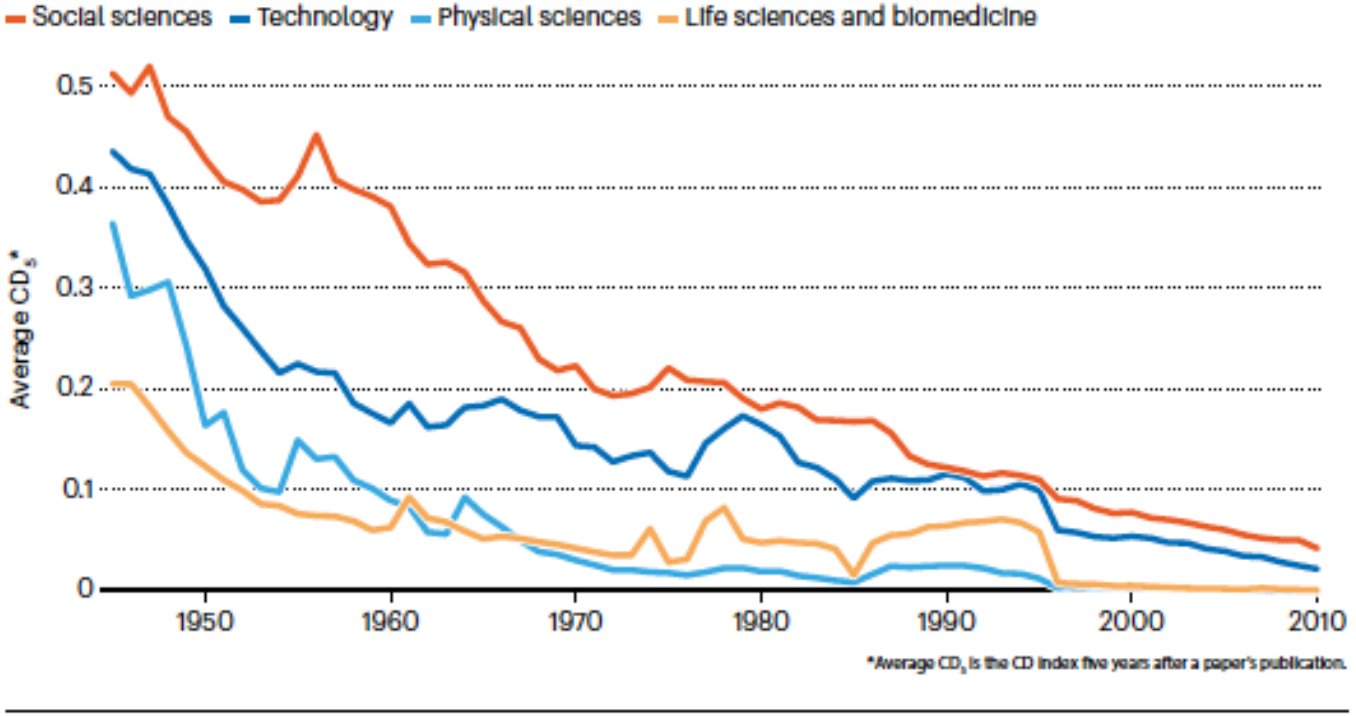
ILLUSTRATION DAVID PARKINS

Russell Funk had no idea how much his work would strike a nerve. But then came a blizzard of news stories and supportive e-mails from hundreds of scientists — along with a critical backlash.

Funk and his co-authors argued that scientific papers and patents had become less disruptive over time, by which they meant that fresh work was less likely to make previous articles obsolete. When they published their paper 2 years ago[1], it drew the attention of more than 250 news outlets. This year, the finding even made its way into a US Congressional hearing.

DISRUPTIVE SCIENCE DWINDLES

To quantify how much a paper shakes up a field, researchers used a metric called a CD index, which ranges from 1 for the most disruptive papers to –1 for the least disruptive. Analysis of millions of papers shows that disruptiveness has fallen over time in all analysed fields.



*Average CD_5 is the CD index five years after a paper's publication.

REVIEW

The answer is 17 years, what is the question: understanding time lags in translational research

Zoë Slote Morris[1] • Steven Wooding[2] • Jonathan Grant[2]

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[2]RAND Europe, Cambridge CB4 1YG, UK
Correspondence to: Jonathan Grant. Email: jgrant@rand.org

DECLARATIONS

Competing interests
None declared

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Summary

This study aimed to review the literature describing and quantifying time lags in the health research translation process. Papers were included in the review if they quantified time lags in the development of health interventions. The study identified 23 papers. Few were comparable as different studies use different measures, of different things, at different time points. We concluded that the current state of knowledge of time lags is of limited use to those responsible for R&D and knowledge transfer who face difficulties in knowing what they should or can do to reduce time lags. This effectively 'blindfolds' investment decisions and risks wasting effort. The study concludes that understanding lags first requires agreeing models, definitions and measures, which can be applied in practice. A second task would be to develop a process by which to gather these data.

ELSEVIER
Check for updates
Journal of Clinical Epidemiology 150 (2022) 106–115
Journal of Clinical Epidemiology

ORIGINAL ARTICLE

2,109 randomized oncology trials map continuous, meager improvements in progression-free and overall survival over 50 years

Austin J. Parish[a,b,*], Ioana Alina Cristea[a,c], Ewoud Schuit[d,e], John P.A. Ioannidis[a,f,g,h,i]

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[b]Department of Emergency Medicine, Lincoln Medical and Mental Health Center, Weill Cornell Medicine of Cornell University, Bronx, NY, USA
[c]Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy
[d]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands
[e]Cochrane Netherlands, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands
[f]Stanford Prevention Research Center, Department of Medicine, Stanford University School of Medicine, Stanford, CA, USA
[g]Department of Epidemiology and Population Health, Stanford University School of Medicine, Stanford, CA, USA
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Accepted 23 June 2022; Published online 28 June 2022

Abstract

Objectives: To assess the patterns and time trends in overall survival and progression-free survival treatment effects across randomized controlled trials (RCTs) in oncology.

Study Design and Setting: A PubMed search for oncology network meta-analyses (NMAs) was carried (to September 30, 2021). Relevant hazard ratios were extracted for systemic treatments from RCTs in the NMAs. After removing duplicate results, relationships between treatment effects, year of publication, trial design, and other features were explored.

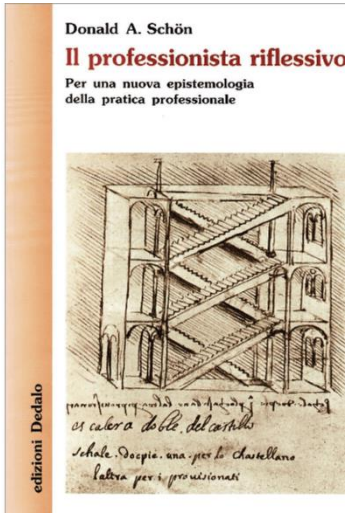
Results: From 241 oncology NMAs, 2,109 unique eligible RCTs provided analyzable data. On average, there was a 12%–14% reduction in hazard for overall survival and 27%–30% reduction for progression-free survival, with substantial heterogeneity across different malignancies. Correlation between overall survival and progression-free survival treatment effects was modest ($r = 0.60$, 95% confidence interval, 0.56–0.64). Over time, there was a suggestive trend of increased progression-free survival treatment effect, although overall survival treatment effects remained steady. Only one in five trials met criteria for clinically meaningful improvements in overall survival. Among 300 randomly selected trials, mean absolute improvement was 1.6 months for median progression-free survival and 1.4 months for median overall survival.

Conclusion: Broad patterns across the past 50 years of oncology research suggest continuous progress has been made, but few results meet clinically meaningful thresholds for overall survival improvement.

Keywords: Umbrella review; Overall survival; Progression free survival; Clinical trial design; Randomized trial; Oncology; Cancer; Network meta-analysis; Meta-Research

Fare

Saper fare



Far sapere

Sapere

OSTACOLI ACQUISIZIONE CONOSCENZE – APPLICAZIONE NELLA PRATICA

- 1. Gap tra evidenze ottenute in RCT e pratica clinica di routine
- 2. Linee guida non aggiornate/applicabili
- 3. Formazione insufficiente dei clinici
- 4. Resistenze al cambiamento
- 5. Barriere organizzative e di risorse
- 6. Mancanza di strumenti operativi
- 7. Scarso supporto istituzionale
- 8. Interoperabilità limitata dei sistemi
- 9. Scarsa cultura di valutazione sistematica degli esiti
- 10. Barriere economiche e di rimborso

SITUAZIONI DI DISCONNESSIONE RICERCA-PRATICA CLINICA

- **Non vengono applicati interventi efficaci in situazioni che richiedono un intervento**
- **Vengono applicati interventi efficaci ma in situazioni che NON richiedono un intervento**
- **Vengono applicati interventi efficaci ma in modo scorretto**
- **Vengono applicati interventi efficaci ma in ritardo**
- **Linee-guida relative a nuovi interventi non sono adattabili ai contesti locali**

QUANTI SONO GLI INTERVENTI NON-FARMACOLOGICI (PSICOSOCIALI) DI DIMOSTRATA EFFICACIA PER I PRINCIPALI DISTURBI MENTALI?

1. Disturbi depressivi	~6 interventi efficaci
2. Disturbi d'ansia	~6–7 interventi
3. Disturbi psicotici	~5 interventi
4. Disturbo bipolare	~4 interventi
5. Disturbi da uso di sostanze	~4–5 interventi
6. Disturbi di personalità	~3–4 interventi
7. Disturbi alimentari	~3 interventi

1° biomarker in psichiatria per la diagnosi differenziale della depressione unipolare vs la depressione bipolare: EDIT-B.

Translational Psychiatry www.nature.com/tp

ARTICLE OPEN

Check for updates

A game changer for bipolar disorder diagnosis using RNA editing-based biomarkers

Nicolas Salvetat[1], Francisco Jesus Checa-Robles[1], Vipul Patel[1], Christopher Cayzac[1], Benjamin Dubuc[1], Fabrice Chimienti[1], Jean-Daniel Abraham[1], Pierrick Dupré[1], Diana Vetter[1], Sandie Mèreuze[1], Jean-Philippe Lang[1,2], David J. Kupfer[3], Philippe Courtet[4] and Dinah Weissmann[1✉]

In clinical practice, differentiating Bipolar Disorder (BD) from unipolar depression is a challenge due to the depressive symptoms, which are the core presentations of both disorders. This misdiagnosis during depressive episodes results in a delay in proper treatment and a poor management of their condition. In a first step, using A-to-I RNA editome analysis, we discovered 646 variants (366 genes) differentially edited between depressed patients and healthy volunteers in a discovery cohort of 57 participants. After using stringent criteria and biological pathway analysis, candidate biomarkers from 8 genes were singled out and tested in a validation cohort of 410 participants. Combining the selected biomarkers with a machine learning approach achieved to discriminate depressed patients ($n = 267$) versus controls ($n = 143$) with an AUC of 0.930 (CI 95% [0.879–0.982]), a sensitivity of 84.0% and a specificity of 87.1%. In a second step by selecting among the depressed patients those with unipolar depression ($n = 160$) or BD ($n = 95$), we identified a combination of 6 biomarkers which allowed a differential diagnosis of bipolar disorder with an AUC of 0.935 and high specificity (Sp = 84.6%) and sensitivity (Se = 90.9%). The association of RNA editing variants modifications with depression subtypes and the use of artificial intelligence allowed developing a new tool to identify, among depressed patients, those suffering from BD. This test will help to reduce the misdiagnosis delay of bipolar patients, leading to an earlier implementation of a proper treatment.

Translational Psychiatry (2022)12:182 ; https://doi.org/10.1038/s41398-022-01938-6

Psychiatry Research 328 (2023) 115422

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Euthymic and depressed bipolar patients are characterized by different RNA editing patterns in blood

Mirian A.F. Hayashi[a,b,i,*], Nicolas Salvetat[c,i], Christopher Cayzac[c], Francisco Jesus Checa-Robles[c], Benjamin Dubuc[c], Sandie Mereuze[c], João V. Nani[a,b], Franck Molina[c], Elisa Brietzke[d], Dinah Weissmann[c,*]

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[c] ALCEDIAG/Sys2Diag, CNRS UMR 9005, Parc Euromédecine, 1682 rue de la Valsière, Montpellier 34184, France
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ARTICLE INFO

Keywords:
Bipolar disorder
RNA editing
Blood biomarker

ABSTRACT

Bipolar disorder (BD) is a worldwide leading cause of disability. Inflammation roles in this disease is well established. *ADAR1* mediated RNA editing is one of the key mechanisms regulating the inflammatory response. We have identified a panel of RNA editing-based blood biomarkers which allowed to discriminate unipolar from BD depression with high accuracy. We confirmed here the diagnostic value of this panel in a new cohort of BD patients recruited in Brazil. We also identified new combinations which allow a clear discrimination of BD from healthy controls and among BD subgroups, confirming that RNA editing is a key mechanism in BD.

Miranda-Mendizabal et al. *Annals of General Psychiatry* (2025) 24-7
https://doi.org/10.1186/s12991-024-00544-8

Annals of General Psychiatry

RESEARCH Open Access

RNA editing-based biomarker blood test for the diagnosis of bipolar disorder: protocol of the EDIT-B study

Andrea Miranda-Mendizabal[1,2*†], Diana Vetter[3*†], Juan Zambrano[4], Jeff Zarp[5], Victor Chavarría[1,6,7], Anna Giménez-Palomo[2,8,9,10], Meritxell Gonzalez-Campos[2,8,9,10], Marc Valenti[2,8,9,10], Lara Walczer Baldinazzo[11], Sara Siddi[1,2,14], Maurizio Ferrari[12], Dinah Weissmann[3], Chantal Henry[4,13], Josep Maria Haro[1,2,14,15], Lars Vedel Kessing[5,16] and Eduard Vieta[2,8,9,10]

Abstract

Introduction Misdiagnosis of bipolar disorder (BD) can lead to ineffective treatment, increased risk of manic episodes, and increased severity. Objective diagnostic tests or precise tools to diagnose BD and distinguish it from major depressive disorder (MDD) in depressed patients are lacking.

Aim To assess the external diagnostic validity of a blood-based test using an RNA epigenetic signature for the differential diagnosis of BD versus MDD in patients with depression.

Methods and analysis Multicentre cross-sectional study including an adult sample of inpatients or outpatients diagnosed with BD or MDD, currently treated for a major depressive episode. A structured diagnostic interview based on validated scales will be conducted. Sociodemographic variables, clinical history, toxic consumption, current treatment and quality of life will be assessed. Blood samples will be obtained and stored at −80 °C until RNA sequencing analysis. The EDIT-B is a blood-based test that combines RNA editing biomarkers and individual data (e.g., age, sex, and tobacco consumption). The clinical validation performance of the EDIT-B will be evaluated using the area under the curve, sensitivity, specificity, positive and negative predictive values, and likelihood ratios.

Ethics and dissemination The principles of the Declaration of Helsinki 2013, precision psychiatry research and good clinical practice will be followed. The Research Ethics Committees of the participating centres approved the study. Participants will receive an information sheet and must sign the informed consent before the interview. Participants' data will be pseudonymized at the research sites. Any publication will use fully anonymized data. Publications with the final study results will be disseminated in international peer-reviewed journals and presented at international conferences.

Study registration: This study has been registered on clinicaltrials.gov (NCT05603819). Registration date: 28-10-2022.

Keywords Bipolar disorder, RNA editing, Epigenetics, Depression & mood disorders, Diagnosis, Machine learning

Journal of Affective Disorders 356 (2024) 305–393

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Research paper

AI algorithm combined with RNA editing-based blood biomarkers to discriminate bipolar from major depressive disorders in an external validation multicentric cohort

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ABSTRACT

Bipolar disorder (BD) is a leading cause of disability worldwide, as it can lead to cognitive and functional impairment and premature mortality. The first episode of BD is usually a depressive episode and is often misdiagnosed as major depressive disorder (MDD). Growing evidence indicates that peripheral immune activation and inflammation are involved in the pathophysiology of BD and MDD. Recently, by developing a panel of RNA editing-based blood biomarkers able to discriminate MDD from depressive BD, we have provided clinicians a new tool to reduce the misdiagnosis delay observed in patients suffering from BD. The present study aimed at validating the diagnostic value of this panel in an external independent multicentric Switzerland-based cohort of 143 patients suffering from moderate to major depression. The RNA-editing based blood biomarker (BMK) algorithm developped allowed to accurately discriminate MDD from depressive BD in an external cohort, with high accuracy, sensitivity and specificity values (82.5 %, 86.4 % and 80.0 %, respectively). These findings further confirm the important role of RNA editing in the physiopathology of mental disorders and emphasize the possible clinical usefulness of the biomarker panel for optimization treatment delay in patients suffering from BD.

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TEST myEDIT-B PER LA DIAGNOSI DIFFERENZIALE TRA DISTURBO BIPOLARE E DEPRESSIONE UNIPOLARE

Il test myEDIT-B rientra nel processo di diagnosi per i disturbi dell'umore, a supporto dei metodi diagnostici già in uso. È destinato a pazienti di ambo i sessi, maggiori di 18 anni, per i quali è già stata formulata una diagnosi e che sono già in trattamento per episodi depressivi.
Il test viene effettuato tramite tecniche NGS (next generation sequencing) mirate a rilevare specifici profili di RNA editing (adenonosina in inosina in 8 biomarker).
Si ricorda che il risultato funge da supporto nella diagnosi; pertanto, un esito non esclude necessariamente l'altro e questo deve essere inserito nel contesto clinico del paziente che vi si è sottoposto.

AVVERTENZE

- L'invio dei campioni biologici deve essere sempre accompagnato dalla modulistica SCHEACC041 adeguatamente compilata e firmata sia dal medico specialista richiedente che dal paziente;
- la mancata compilazione di anche solo un campo di SCHEACC041 implica l'impossibilità di accettazione del paziente da parte del personale di accettazione;
- la compilazione di SCHEACC041 è obbligatoria ai fini dell'erogazione del test: non saranno accettate eventuali versioni alternative (es.: richiesta redatta dal medico su carta bianca);
- le credenziali per lo scarico del referto sono quelle fornite al medico in sede di attivazione della convenzione o possono eventualmente essere richieste al back office regionale di riferimento;
- in taluni casi l'RNA estratto dai campioni biologici può risultare non idoneo all'esecuzione del test. In questi casi si rende necessaria la ripetizione del prelievo e la ricompilazione della SCHEACC041.

DOCUMENTI NECESSARI

SCHEACC041 Scheda accettazione ed informativa myEDIT-B

PREPARAZIONE DOCUMENTAZIONE

È responsabilità del medico richiedente fornire le informazioni necessarie per l'esecuzione del test, compilando debitamente il documento SCHEACC041.
Il documento presenta:

- sezione relativa alla anagrafica del paziente, alla raccolta delle informazioni cliniche e sui farmaci in uso;
- sezione relativa all'informativa specifica per il medico richiedente, a valle della quale lo stesso appone data e firma;
- sezione relativa alla dichiarazione rilasciata dal paziente riguardante l'autorizzazione al ricevimento del referto da parte del medico prescrittore; a valle della dichiarazione il paziente appone la propria firma;
- sezione informativa sul test myEDIT-B, riguardo al materiale biologico oggetto dell'analisi, al know-how sottostante l'esame stesso, al tipo di risultato erogato e, anche, informazioni su performance e limiti del test;
- sezione relativa all'espressione del consenso da parte del paziente.