

Integridad científica. Desviaciones en el ejercicio de la investigación

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Instituto de Agricultura Sostenible. Córdoba, 10 de abril de 2015

- La confianza en los científicos
- ¿Qué es fraude/mala praxis en ciencia?
- ¿Qué magnitud tiene?
- ¿Cómo se distribuye?
- ¿Por qué ocurre?
- ¿Cuáles son sus consecuencias?
- ¿Qué hacer?



La confianza en los científicos









EL PAÍS

23 Agosto 2014

EVALUACIÓN CIUDADANA DE LAS PRINCIPALES INSTITUCIONES, ENTIDADES Y GRUPOS SOCIALES

Porcentaje de españoles que **evalúan de forma positiva** la contribución que, con su funcionamiento, hacen al bienestar público...

Puesto en la clasificación general  % de aprobación ciudadana del **65% o superior**.
 Obtienen una aprobación ciudadana **inferior al 50%**

↓ CUERPOS Y ORGANISMOS DE LA ADMINISTRACIÓN PÚBLICA	JULIO 2014		JULIO 2013
	1º Los investigadores científicos		89%
2º Los médicos de la Sanidad Pública		85%	92
3º Los profesores de la enseñanza pública		81%	85
5º La Guardia Civil		72%	85
8º La policía		69%	83
10º Las Universidades		61%	75
12º Las Fuerzas Armadas		59%	72
15º La Sanidad Pública (organización...)		49%	73
17º La inspección de Hacienda		39%	53

Fuente: Metroscopia, Barómetros de Confianza institucional de los españoles, julio 2014 y julio 2013

Percepción del impacto de C y T sobre la sociedad

QD5. ¿Piensa que la influencia global de la ciencia y la tecnología en la sociedad (NACIONALIDAD) es positiva o negativa?



La Ciencia persigue encontrar la verdad

Su finalidad es conseguir el mejor conocimiento y comprensión de la realidad

"The only ethical principle which has made science possible is that the truth shall be told all the time.

And of course a false statement of fact, made deliberately, is the most serious crime a scientist can commit."

The Search (1934), C.P. Snow (1905-1980)

Fraude

Cualquier tipo de acción contraria a la verdad o a la rectitud, cuyo objetivo sea el de conseguir un beneficio en perjuicio de otro (individuo, organización, comunidad...)

En Ciencia:

- ✓ Cualquier forma de mala praxis en investigación, con el interés primario de engañar
- ✓ Conducta contraria a la deontología científica (integridad científica/investigadora)

Definition of (Fraud) Research Misconduct

Department of Health and Human Services, USA

Working Definition based on the definitions from Office of Research Integrity & National Science Foundation

Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

- Fabrication: is making up data or results and recording or reporting them.
- Falsification: is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
- Plagiarism: is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

Research misconduct does not include honest errors or differences of opinion

Requirements for findings of research misconduct

A finding of research misconduct made under this part requires that

- (a) There be a significant departure from accepted practices of the relevant research community; and
- (b) The misconduct be committed intentionally, knowingly, or recklessly; and
- (c) The allegation be proven by a preponderance of the evidence.

Research Misconduct, Mala praxis

Otras definiciones:

Norwegian Committee on Scientific Dishonesty:

‘all serious deviation from accepted ethical research practice in proposing, performing, and reporting research’.

British consensus conference (Edinburgh, 2000):

‘Behaviour by a researcher, intentional or not, that falls short of good ethical and scientific standards’



CÓDIGO DE BUENAS
PRÁCTICAS CIENTÍFICAS
DEL CSIC



CODE OF
GOOD SCIENTIFIC
PRACTICES OF CSIC



 **CSIC**

1.5. Desviaciones en el ejercicio de la investigación

La ciencia como búsqueda del conocimiento, es por principio, enemiga del fraude. Sin embargo, cabe la posibilidad de desviaciones en la actividad de los investigadores, buscando fama o méritos inmerecidos, o incluso en algún caso, beneficios económicos personales o institucionales.

Este tipo de desviaciones, constituyen el mayor atentado al buen desarrollo de la práctica científica, y son responsabilidad última del científico que las practica. Éstas pueden ser:

- Interpretación abusiva de datos.
- Falsificación de datos o pruebas para que cuadren con la hipótesis de partida.
- Fabulación de datos y descubrimientos.
- Plagio de trabajos ajenos.

La magnitud del problema

THE GALLUP ORGANIZATION for The Office of Research Integrity

Final report: Observing and Reporting Suspected Misconduct in Biomedical Research December 31, 2006; Revised April 2008

- 201 FFP reports made by 2,212 scientists in three years (67 per year).
Incidence of possible misconduct: **3% per year**
- 3% of 155,000 scientists supported by NIH: 4,670 incidents of possible research misconduct per year (1.5%: 2,335; 1%: 1,550)
- ORI: 114 allegations per year (1993-2006)
- The reports to ORI of misconduct are just the tip of the iceberg; many reports are not being made to institutions and or institutions are not always pursuing the allegation in a manner which the regulations have specified.

COMMENTARY

Repairing research integrity

A survey suggests that many research misconduct incidents in the United States go unreported to the Office of Research Integrity. **Sandra L. Titus**, **James A. Wells** and **Lawrence J. Rhoades** say it's time to change that.

SUSPECTED MISCONDUCT: 201 CASES OBSERVED BY 164 SCIENTISTS

	Number of cases
Type of misconduct	
Fabrication or falsification	120 (59.7%)
Plagiarism only	73 (36.3%)
Unknown	8 (4.0%)
Rank of those suspected*	
Professor or senior scientist	44 (21.9%)
Associate professor or scientist	28 (13.9%)
Assistant professor or scientist	34 (16.9%)
Postdoctoral fellow	50 (24.9%)
Graduate student	29 (14.4%)
Other (includes 1 unknown)	24 (11.9%)

How it was discovered

Directly observed	23 (11.4%)
Observed products	53 (26.4%)
Told first, then observed	60 (29.9%)
Other direct evidence	30 (14.9%)
Other	30 (14.9%)
Don't recall	1 (0.5%)
No answer	4 (2.0%)

Was it reported?

Yes, reported by responder	49 (24.4%)
Yes, reported by someone else	67 (33.3%)
No, not reported	75 (37.3%)
Don't know	5 (2.5%)
No answer	5 (2.5%)

* Eight cases identified more than one person involved in incident.

La magnitud del problema

NATURE|Vol 435|9 June 2005

NEWS

One in three scientists confesses to having sinned

More than a third of US scientists, in a survey of thousands, have admitted to misbehaving in the past three years. The social scientists who carried out the study of research misconduct warn that because attention is focused on high-profile, serious cases, a broader threat from more minor deeds is being missed.

Their conclusions may hit a nerve, particularly among scientific societies in the United States. Throughout the 1990s, these groups fought to limit their government's definition of misconduct and the types of behaviour it is responsible for policing.

Brian Martinson of the HealthPartners Research Foundation in Minneapolis, Minnesota, and his colleagues mailed an anonymous survey to thousands of

scientists funded by the National Institutes of Health. They asked the scientists whether they were guilty of misbehaviours ranging from falsifying data to inadequate record keeping.

Of 3,247 early- and mid-career researchers who responded, less than 1.5% admitted to falsification or plagiarism, the most serious types of misconduct listed. But 15.5% said they had changed the design, methodology or results of a study in response to pressure from a funding source; 12.5% admitted overlooking others' use of flawed data; and 7.6% said they had

circumvented minor aspects of requirements regarding the use of human subjects (see page 737).

Overall, about a third admitted to at least one of the ten most serious offences on

the list — a range of misbehaviours described by the authors as “striking in its breadth and prevalence”.

But Arthur Caplan, director of the Center for Bioethics at the University

of Pennsylvania, Philadelphia, cautions against concluding that the structure of science is corroded. He points out that dropping an outlying data point is not the same as plagiarizing a paper.

“The majority of misbehaviours reported are more corrosive than explosive. That makes them no less damaging.”

Scientist behaving badly (2005)

B.C. Martinson, M.S. Anderson and R. de Vries. Nature 435, 737-738; doi:10.1038/435737a

Table 1 Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)				
Top ten behaviours	All	Mid-career	Early-career	
1. Falsifying or 'cooking' research data	0.3	0.2	0.5	Falsificación
2. Ignoring major aspects of human-subject requirements	0.3	0.3	0.4	
3. Not properly disclosing involvement in firms whose products are based on one's own research	0.3	0.4	0.3	
4. Relationships with students, research subjects or clients that may be interpreted as questionable	1.4	1.3	1.4	Plagio
5. Using another's ideas without obtaining permission or giving due credit	1.4	1.7	1.0	
6. Unauthorized use of confidential information in connection with one's own research	1.7	2.4	0.8 ***	
7. Failing to present data that contradict one's own previous research	6.0	6.5	5.3	
8. Circumventing certain minor aspects of human-subject requirements	7.6	9.0	6.0 **	Falsificación?
9. Overlooking others' use of flawed data or questionable interpretation of data	12.5	12.2	12.8	
10. Changing the design, methodology or results of a study in response to pressure from a funding source	15.5	20.6	9.5 ***	
Other behaviours				
11. Publishing the same data or results in two or more publications	4.7	5.9	3.4 **	
12. Inappropriately assigning authorship credit	10.0	12.3	7.4 ***	
13. Withholding details of methodology or results in papers or proposals	10.8	12.4	8.9 **	
14. Using inadequate or inappropriate research designs	13.5	14.6	12.2	
15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate	15.3	14.3	16.5	
16. Inadequate record keeping related to research projects	27.5	27.7	27.3	
Note: significance of χ^2 tests of differences between mid- and early-career scientists are noted by ** ($P < 0.01$) and *** ($P < 0.001$).				

Scientists behaving badly (2005)

B.C. Martinson, M.S. Anderson and R. de Vries. *Nature* 435, 737-738; doi:10.1038/435737a

“Overall, 33% of the respondents said they had engaged in at least one of the top ten behaviours during the previous three years”

“To protect the integrity of science, we must look beyond falsification, fabrication and plagiarism, to a wider range of questionable research practices”

Praxis cuestionable

(Otras malas prácticas científicas, adicionales a FFP)

- ✓ Omisión de declaración de conflictos de interés o fuentes de financiación
- ✓ Apropiación indebida de autoría o falsa información sobre la misma
- ✓ Omisión de cita de autores
- ✓ Obstrucción de la investigación realizada por otros
- ✓ Encubrimiento o facilitación de mala praxis por parte de otros
- ✓ Abuso de liderazgo. Negligencia en el ejercicio del liderazgo
- ✓ Abuso del sistema de revisión por pares
- ✓ Omisión de referencias a trabajos que contradigan la hipótesis propia
- ✓ Excesos en la interpretación de los resultados
- ✓ Presentación pública de resultados sin sustanciar adecuadamente
- ✓ Fragmentación de publicaciones
- ✓ Exclusión de datos “desviados” sin mencionarlo expresamente
- ✓ ...

How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data

Daniele Fanelli*

INNOGEN and ISSTI-Institute for the Study of Science, Technology & Innovation, The University of Edinburgh, Edinburgh, United Kingdom

Abstract

The frequency with which scientists fabricate and falsify data, or commit other forms of scientific misconduct is a matter of controversy. Many surveys have asked scientists directly whether they have committed or know of a colleague who committed research misconduct, but their results appeared difficult to compare and synthesize. This is the first meta-analysis of these surveys. To standardize outcomes, the number of respondents who recalled at least one incident of misconduct was calculated for each question, and the analysis was limited to behaviours that distort scientific knowledge: fabrication, falsification, “cooking” of data, etc... Survey questions on plagiarism and other forms of professional misconduct were excluded. The final sample consisted of 21 surveys that were included in the systematic review, and 18 in the meta-analysis. A pooled weighted average of 1.97% (N = 7, 95%CI: 0.86–4.45) of scientists admitted to have fabricated, falsified or modified data or results at least once –a serious form of misconduct by any standard– and up to 33.7% admitted other questionable research practices. In surveys asking about the behaviour of colleagues, admission rates were 14.12% (N = 12, 95% CI: 9.91–19.72) for falsification, and up to 72% for other questionable research practices. Meta-regression showed that self reports surveys, surveys using the words “falsification” or “fabrication”, and mailed surveys yielded lower percentages of misconduct. When these factors were controlled for, misconduct was reported more frequently by medical/pharmacological researchers than others. Considering that these surveys ask sensitive questions and have other limitations, it appears likely that this is a conservative estimate of the true prevalence of scientific misconduct.

Citation: Fanelli D (2009) How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data. PLoS ONE 4(5): e5738. doi:10.1371/journal.pone.0005738

- *21 estudios
- ***Científicos que admiten falsificación y/o fabricación (excluyendo plagio) : 1,97% (CI: 0.86–4.45)**
- ***Otros tipos de malas prácticas (praxis cuestionable, QRP): 33%**
- ***Científicos que han conocido falsificación y/o fabricación de otros: 14%**
- ***Que han conocido QRP de otros: 46%**

Distribución de la mala praxis

OPEN ACCESS Freely available online

PLOS MEDICINE

Essay

Research Misconduct in Low- and Middle-Income Countries

Joseph Ana^{1,2}, Tracey Koehlmoos³, Richard Smith^{4*}, Lijing L. Yan⁵ March 2013 | 10: 1-6 | e1001315

All human activity is associated with misconduct, and as scientific research is a global activity, **research misconduct is a global problem.**

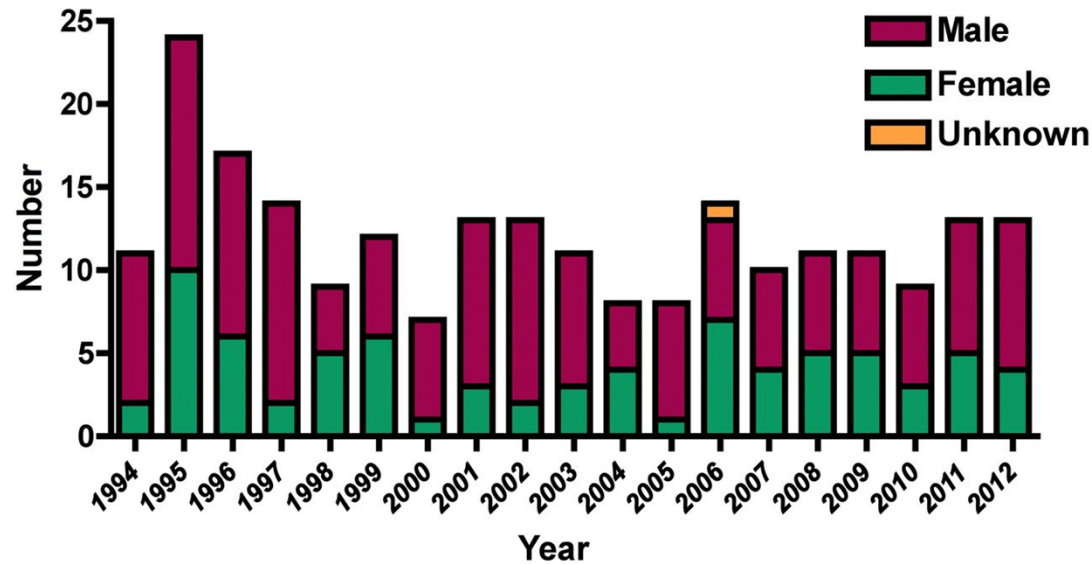
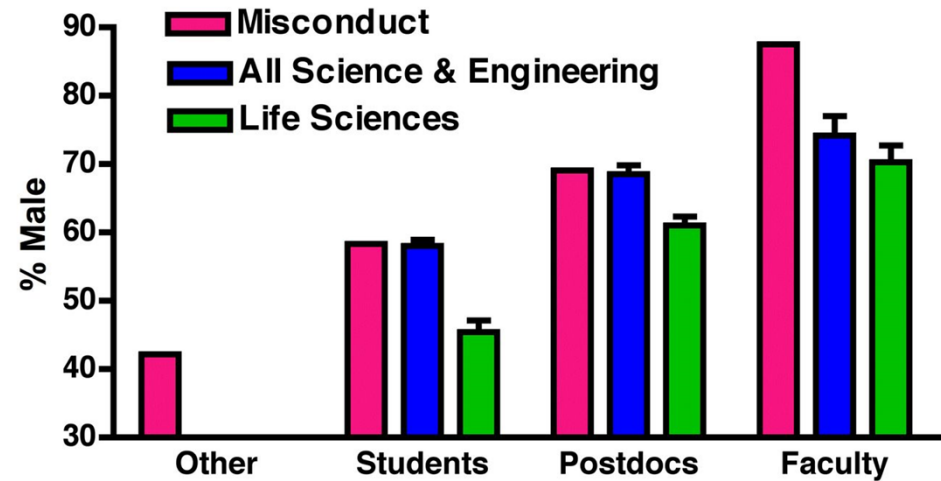
Studies conducted mostly in high-income countries suggest that 2%–14% of scientists may have fabricated or falsified data and that a third to three-quarters may be guilty of “questionable research practices.”

The **few data available from low- and middle-income countries (LMICs) suggest that research misconduct is as common there as in high-income countries**, and there have been high profile cases of misconduct from LMICs.

Country	Ratio of Fraudulent to Total Papers (‰)
USA	0.6
China	0.71
Japan	0.72
India	1.31
UK	0.17
Turkey	0.18
Iran	0.2
All Asian	0.67

Males Are Overrepresented among Life Science Researchers Committing Scientific Misconduct. FC Fang, JW Bennett, A Casadevall (2013) mBio 4:1-3

Datos ORI
65% hombres
(149/215)



Misconduct is distributed along the continuum from trainee to senior scientist.

Men are overrepresented among scientists committing misconduct, with a skewed gender ratio being most pronounced for senior scientists.

How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data

Daniele Fanelli* 2009

Once methodological differences were controlled for, crossstudy comparisons indicated that **samples drawn exclusively from medical (including clinical and pharmacological) research reported misconduct more frequently than respondents in other fields or in mixed samples.**

To the author's knowledge, this is the first crossdisciplinary evidence of this kind, and it suggests that **misconduct in clinical, pharmacological and medical research is more widespread than in other fields.** This would support growing fears that the **large financial interests that often drive medical research are severely biasing it.**

¿Por qué ocurre?

- Presión por publicar y progresar
- Presión por obtener financiación
- Deseo de destacar sobre otros
- Incentivos económicos
- Problemas personales
- Problemas psicológicos
- ...

Fama, promoción, plantilla y financiación son incentivos tentadores para el fraude

La naturaleza del sistema de «recompensas» en investigación contribuye también



Winner takes all

Such a reward system has the benefit of promoting competition and the open communication of new discoveries but has many perverse effects on the scientific enterprise

Casadevall A, Fang FC. 2012. Winner takes all. *Sci. Am.* **307**:13

Sci Eng Ethics (2007) 13:437–461

DOI 10.1007/s11948-007-9042-5

ORIGINAL PAPER

The Perverse Effects of Competition on Scientists’ Work and Relationships

**Melissa S. Anderson · Emily A. Ronning ·
Raymond De Vries · Brian C. Martinson**

El efecto Mateo



MATTH. XXV.

*«Porque al que tiene, se le dará, y tendrá en abundancia;
Y al que no tiene, aun lo que tiene se le quitará»
(Mateo, 25, 29)*

El efecto Mateo en Ciencia

Science, New Series, Vol. 159, No. 3810. (Jan. 5, 1968), pp. 56-63

The Matthew Effect in Science

The reward and communication systems of science are considered.

Robert K. Merton

This paper develops a conception of ways in which certain psychosocial processes affect the allocation of rewards to scientists for their contributions—an allocation which in turn affects the flow of ideas and findings through the communication networks of science. The conception is based

image and the public image of scientists are largely shaped by the communally validating testimony of significant others that they have variously lived up to the exacting institutional requirements of their roles.

A number of workers, in empirical studies, have investigated various as-

pects of the reward system. The Coles have also found that, at least in the case of contemporary American physics, the reward system operates largely in accord with institutional values of the science, inasmuch as quality of research is more often and more substantially rewarded than mere quantity.

In science as in other institutional realms, a special problem in the workings of the reward system turns up when individuals or organizations take on the job of gauging and suitably rewarding lofty performance on behalf of a large community. Thus, that ultimate accolade in 20th-century science, the Nobel prize, is often assumed to mark off its recipients from all the other scientists of the time. Yet this assumption is at odds with the well-known fact that a good number of scientists who have not received the prize and will not receive it have contributed as much to the advancement



ISIS, 79: 606-623, 1988

The Matthew Effect in Science, II Cumulative Advantage and the Symbolism of Intellectual Property

By Robert K. Merton*

18-23 | PNAS | January 4, 2011 | vol. 108 | no. 1

www.pnas.org/cgi/doi/10.1073/pnas.1016733108

Quantitative and empirical demonstration of the Matthew effect in a study of career longevity

Alexander M. Petersen^{a,1}, Woo-Sung Jung^{b,a}, Jae-Suk Yang^c, and H. Eugene Stanley^{a,1}

^aCenter for Polymer Studies and Department of Physics, Boston University, Boston, MA 02215; ^bGraduate Program for Technology and Innovation Management and Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Republic of Korea; and ^cSanford C. Benstein and Co. Center for Leadership and Ethics, Columbia Business School, Columbia University, New York, NY 10027

Contributed by H. Eugene Stanley, November 10, 2010 (sent for review November 8, 2009)

The Matthew effect refers to the adage written some two-thousand years ago in the Gospel of St. Matthew: "For to all those who have, more will be given." Even two millennia later, this idiom is used by sociologists to qualitatively describe the dynamics of individual progress and the interplay between status and reward.

(MLB), Korean Professional Baseball, the National Basketball Association (NBA), and the English Premier League.

Career longevity is a fundamental metric that influences the overall legacy of an employee because for most individuals the measure of success is intrinsically related, although not perfectly

Consecuencias de la mala praxis (no solo afectan a quienes la practican)

Caso “STAP cells” (2014) Obokata et al. Descrédito de:

- Autores
- Comité de investigación
- Centro de investigación
- Institución (RIKEN)
- Revista científica (Nature)



TERUHIKO WAKAYAMA
University of Yamanashi in Kofu; well-known mouse cloning pioneer; formerly at RIKEN
Called for retraction: 10 March

HITOSHI NIWA
Internationally respected stem cell researcher at RIKEN CDB
Agreed to consider retraction: 14 March

YOSHIKI SASAI
Director of Neurogenesis and Organogenesis Group at RIKEN CDB
Agreed to consider retraction: 14 March

CHARLES VACANTI
Tissue engineer at Brigham and Women's Hospital. Initial work by Obokata was done in Vacanti's lab, following up on controversial stem cell research by his team.
Agreed to retraction: 30 May, reportedly, in a letter to *Nature*.

SCIENCE 13 JUNE 2014 • VOL 344 ISSUE 6189 1215
CELL BIOLOGY

STAP cells succumb to pressure

Retraction plans for easy stem cell recipe leave scientists wondering how the papers came to be published

By Dennis Normile and Gretchen Vogel

Hans Schöler, a stem cell scientist at the Max Planck Institute for Molecular Biomedicine in Münster, Germany, offers one lesson from the affair: “Repeat [the experiment] right away. Other people in the lab have to

Two papers that electrified—and confused—the stem cell field just 6 months ago appear to have lost their

Sources in the scientific community confirm that early versions of the STAP work were rejected by *Science*, *Cell*, and *Nature*.

SCIENCE 1110 5 SEPTEMBER 2014 • VOL 345 ISSUE 6201

RIKEN shrinks troubled center

Japan's developmental biology powerhouse brought to knees by misconduct revelations

By Dennis Normile, in Tokyo

Two discredited papers have subjected a leading Japanese research center to an extraordinary form of collective punishment. On 27 August, chemist Ryoji Noyori, president of RIKEN, Japan's biggest research institution, announced that its Center for Developmental Biology (CDB) in Kobe will be stripped of half of its 500-plus staff, renamed, and put under new management.

Meanwhile, a RIKEN-appointed outside committee on 12 June recommended dismantling CDB in order to head off a recurrence of such misconduct. The committee laid most of the blame on Obokata's shoulders, but it also found that lax oversight and a push for breakthrough results by top management set the stage for disaster.

Norio Nakatsuji, a stem cell scientist at Kyoto University, blames CDB management for what he calls “hyper-promotion” of the STAP findings, which



STEM CELL RESEARCH

RIKEN Panel Finds Misconduct in Controversial Paper

RIKEN to Review 20,000 Papers

In the wake of allegations of research misconduct, the president of the Japanese research institute asks that all labs review their publications for evidence of manipulated images or plagiarism.

By Jef Akst | May 5, 2014. *The Scientist*.

One of the RIKEN scientists investigating allegations of misconduct tied to stimulus-triggered acquisition of pluripotency work has resigned from the committee because of anonymous questions raised about his own research.

By Tracy Vence | April 25, 2014. *The Scientist*

Incidencias sobre pacientes

Research ethics

Retractions in the medical literature: how many patients are put at risk by flawed research?

R Grant Steen

J Med Ethics 2011;**37**:688–692. doi:10.1136/jme.2011.043133

Table 1 Summary of the impact of 180 retracted clinical papers

	Number	Average per retracted paper
Citations of retracted papers		
Total citations	5503	30.6
Research-related citations	5143	28.6
Post-retraction citations	1973	11.0
Retraction-related citations	360	2.0
Review papers	1372	7.6
Patient studies	851	4.7
Subjects enrolled in retracted papers		
Total subjects	28 783	160.8
Patients at risk	17 783	99.3
Patients treated	9189	51.3
Subjects enrolled in secondary papers		
Total subjects	445 064	2472.6
Patients at risk	165 588	919.9
Patients treated	70 501	391.7

Vacuna triple vírica y autismo

EARLY REPORT

Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Summary

Background We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods 12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

Findings Onset of behavioural symptoms was associated by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another. All 12 children had intestinal abnormalities ranging from lymphoid nodular hyperplasia to granulomatous inflammation. Histology showed patchy chronic inflammation in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and MRI and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls (mean 0.03), low haemoglobin in four children, and low serum IgA in four children.

Interpretation We identify associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers.

Lancet 1998; **351**: 637–41
See Commentary page

Inflammatory Bowel Disease Study Group, University Departments of Medicine and Histopathology (A J Wakefield FRCS, A Anthony MB, J Linnell PhD, A P Dhillon MRCPsib, S E Davies MRCPsib) and **the University Departments of Paediatric Gastroenterology** (S H Murch MB, D M Casson MRCP, M Malik MRCP, M A Thomson FRCP, J A Walker-Smith FRCP), **Child and Adolescent Psychiatry** (M Berelowitz FRCPsych), **Neurology** (P Harvey FRCP), and **Radiology** (A Valentine FRCP), **Royal Free Hospital and School of Medicine, London NW3 2QG, UK**

Correspondence to: Dr A J Wakefield

Introduction

We saw several children who, after a period of apparent normality, lost acquired skills, including communication. They all had gastrointestinal symptoms, including abdominal pain, diarrhoea, and bloating and, in some cases, food intolerance. We describe the clinical findings, and gastrointestinal features, of these children.

Patients and methods

12 children, consecutively referred to the department of paediatric gastroenterology with a history of a pervasive developmental disorder with loss of acquired skills and intestinal symptoms (abdominal pain, bloating and food intolerance), were investigated. All children were admitted to the ward for 1 week, accompanied by their parents.

Clinical investigations

We took histories including details of immunisations and exposure to infectious diseases, and assessed the children. In 11 cases the history was obtained by the senior clinician (JW-S). Neurological and psychiatric assessments were done by consultant staff (PH, MB) with HMS-4 criteria.¹ Developmental records included a review of prospective developmental records from parents, health visitors, and general practitioners. Four children did not undergo psychiatric assessment in hospital; all had been assessed professionally elsewhere, so these assessments were used as the basis for their behavioural diagnosis.

After bowel preparation, ileocolonoscopy was performed by SHM or MAT under sedation with midazolam and pethidine. Paired frozen and formalin-fixed mucosal biopsy samples were taken from the terminal ileum; ascending, transverse, descending, and sigmoid colons, and from the rectum. The procedure was recorded by video or still images, and were compared with images of the previous seven consecutive paediatric colonoscopies (four normal colonoscopies and three on children with ulcerative colitis), in which the physician reported normal appearances in the terminal ileum. Barium follow-through radiography was possible in some cases.

Also under sedation, cerebral magnetic-resonance imaging (MRI), electroencephalography (EEG) including visual, brain stem auditory, and sensory evoked potentials (where compliance made these possible), and lumbar puncture were done.

Laboratory investigations

Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of childhood neurodegenerative disease. Urinary methylmalonic acid was measured in random urine samples from eight of the 12 children and 14 age-matched and sex-matched normal controls, by a modification of a technique described previously.² Chromatograms were scanned digitally on computer, to analyse the methylmalonic-acid zones from cases and controls. Urinary methylmalonic-acid concentrations in patients and controls were compared by a two-sample *t* test. Urinary creatinine was estimated by routine spectrophotometric assay.

Children were screened for antiendomyxal antibodies and boys were screened for fragile-X if this had not been done

The Vaccine-Autism Connection: A Public Health Crisis Caused by Unethical Medical Practices and Fraudulent Science

Dennis K Flaherty

The Annals of Pharmacotherapy ■ 2011 October, Volume 45

The Wakefield autism paper gained scientific legitimacy when published in the prestigious and widely read medical journal *The Lancet* in 1998.¹ In 2000, Wakefield published another article claiming that the measles, mumps, and rubella (MMR) vaccine was introduced into mass vaccination programs without sufficient safety testing.² Both papers garnered little interest until a medical charity, which promotes gastrointestinal research, held a televised press conference during which Wakefield outlined his reservations about the safety of the MMR vaccine and the connection between this vaccine and autism-enterocolitis.

In 1998, Dr. Andrew Wakefield, a British gastroenterologist, described a new autism phenotype called the regressive autism-enterocolitis syndrome triggered by environmental factors such as measles, mumps, and rubella (MMR) vaccination. The speculative vaccination-autism connection decreased parental confidence in public health vaccination programs and created a public health crisis in England and questions about vaccine safety in North America. After 10 years of controversy and investigation, Dr. Wakefield was found guilty of ethical, medical, and scientific misconduct in the publication of the autism paper. Additional studies showed that the data presented were fraudulent. The alleged autism-vaccine connection is, perhaps, the most damaging medical hoax of the last 100 years.

KEY WORDS: MMR vaccine, regressive autism, Wakefield.

Ann Pharmacother 2011;45:1302-4.

Published Online, 13 Sept 2011, *theannals.com*, DOI 10.1345/aph.1Q318

Vacuna triple vírica y autismo

THE WALL STREET JOURNAL.

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<http://www.wsj.com/articles/SB10001424127887323300004578555453881252798>

EUROPE NEWS

Fifteen Years After Autism Panic, a Plague of Measles Erupts

Legions spurned a long-proven vaccine, putting a generation at risk



Aleshia Jenkins receives a measles vaccine this year. *FERGUS THOMAS*

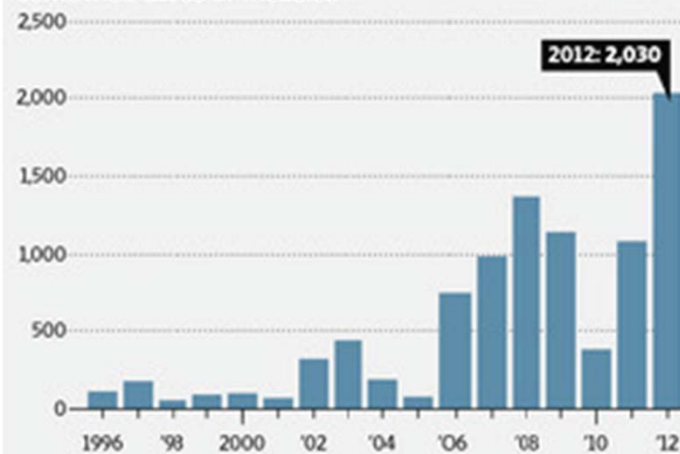
By **JEANNE WHALEN** and **BETSY MCKAY**

July 19, 2013 10:30 p.m. ET

Worrisome Comeback

Fears that a measles vaccine might cause autism helped lead to a temporary decrease in vaccinations in England and Wales, which resulted in an increase of measles cases there.

Confirmed cases of measles



Source: Public Health England

The Wall Street Journal

Flawed science: The fraudulent research practices of social psychologist Diederik Stapel

Levelt Committee (Tilburg University)

Noort Committee (University of Groningen)

Drenth Committee (University of Amsterdam)

28 november 2012. English translation of the Dutch report *'Falende wetenschap: De frauduleuze onderzoekspraktijken van social-psycholoog Diederik Stapel'*

- **Responsible for data fraud in 55 published papers and 10 PhD theses written by students under his supervision.** There were also **doubts about another 10 papers**, although fraud could not be proven beyond reasonable doubt.
- **From the bottom to the top there was a general neglect of fundamental scientific standards and methodological requirements**
- **Social psychology is a field with a culture of “sloppy” science in which researchers lack a basic understanding of statistics**

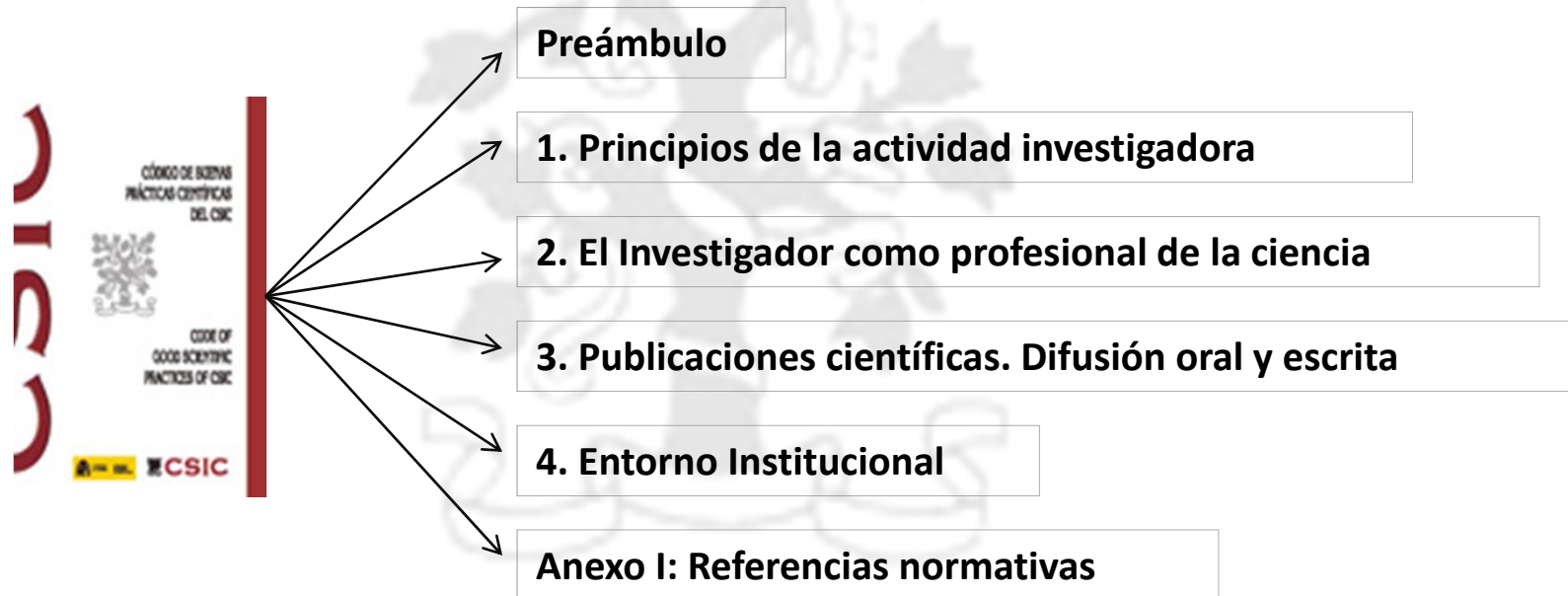
¿Qué hacer?

Prevenir

- Establecer cultura de honestidad en lugar de trabajo e institución
- Seguir de cerca el progreso de la investigación
- Discutir sobre resultados sin elaborar
- Informar y educar en integridad científica

COMITÉ DE ÉTICA: Código de Buenas Prácticas Científicas

□ Estructura



COMITÉ DE ÉTICA: Código de Buenas Prácticas Científicas

A modo de resumen:

El Código de Buenas Prácticas orienta el ejercicio y desarrollo de la actividad investigadora del personal y las unidades que dependen del CSIC

Considera los principios generales a seguir en la investigación científica.

Trata las bases del comportamiento íntegro en ciencia, de forma que los jóvenes que se incorporen encuentren guías adecuadas para el desarrollo de su actividad.

Pretende, muy especialmente, evitar desviaciones en el ejercicio de la investigación

Si la prevención no basta...

Detectar

Investigar

Reprobar. Sancionar

Difundir actuación



Fundación General CSIC

Abril 2015

Miguel García Guerrero, director

Fundación General CSIC

Fundación privada sin ánimo de lucro

Patronato 

Presidente: Presidente del CSIC

Año de creación: 2008

Personal: 13

Localización:

Príncipe de Vergara 9
2º Dcha. 28001 Madrid



Misión

...Reforzar las capacidades del CSIC...

Plataforma de **transferencia de conocimiento** para incrementar el valor económico y social de las investigaciones del CSIC, con objeto de conseguir mayor efectividad y penetración en la sociedad de los resultados de su actividad

Agente promotor del **compromiso público-privado** en investigación, a través del establecimiento de un entorno estable de colaboración con empresas y otros entes sociales

Transferencia

- Apoyar la comercialización de tecnologías CSIC (búsqueda de licenciarios)
- Canalizar al CSIC las necesidades tecnológicas del sector industrial
- Acompañar al CSIC en ferias y encuentros sectoriales
- Promover el desarrollo de “pruebas de concepto”
- Impulsar la transferencia de conocimiento en el ámbito de las humanidades y las ciencias sociales
 - Búsqueda de oportunidades de transferencia en esta área
 - FGCSIC miembro de la junta directiva del Clúster Plataforma del Español y del consejo rector del Foro del Español 2.0 (IFEMA, abril 2015)
 - Organización de jornadas de *networking* con empresas en esta área
- Sistema de VT & IC activo para análisis de oferta y demanda tecnológica
- FGCSIC integrada en la Comisión de Transferencia del Conocimiento e Innovación del CSIC (COTRIN-CSIC)



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Investigación Transdisciplinar

- Promover investigación de excelencia, singular y extraordinaria, con aproximación transdisciplinar, para la resolución de problemas, necesidades o cuestiones de índole científica, social y económica

2010  **Proyectos Cero**
Especies amenazadas



1,1 M€
5 Proyectos

FIN

2011  **Proyectos Cero**
Envejecimiento



1,1 M€
5 Proyectos

4 prorrogados

- Actos anuales de presentación resultados
- Actuaciones de difusión con medios de comunicación
- Presencia en Redes Sociales
- Blog “Envejecer en positivo”



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Internacionalización

- Colaborar con el CSIC en su participación en programas internacionales
 - Cátedra permanente en Análisis de Riesgos Adversarios (David Ríos, ICMAT): La FGCSIC gestiona el fondo AXA (1,1 M€) durante 8 años
 - Analizar oportunidades de participación del CSIC empleando nuestras herramientas de VT&IC
 - Fomentar la presencia de las humanidades y las ciencias sociales

- Impulsar la participación en de la FGCSIC en proyectos europeos
 - La FGCSIC es nodo español de observatorios europeos de políticas científicas (EraWatch y TrendChart)
 - H2020



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Formación

- Reforzar las habilidades de gestión y liderazgo de los directores y gerentes del CSIC: Gestión y coordinación de los cursos de Formación Directiva y Gerencial del CSIC, formación ligada a la estrategia corporativa, fortalecimiento institucional e impulso de nuevas acciones y proyectos. Trata de cohesionar equipos y trasladar visión de futuro a largo plazo para el CSIC
 - Dirigida a directores y gerentes de los 123 centros e institutos del CSIC
 - 5 ediciones entre 2014-2015: Cataluña, Andalucía, Madrid, Zona Norte, Zona Mediterránea
 - 60 horas en 3 módulos
- Aprovechar las capacidades científico-técnicas del CSIC para programas de formación
 - Apoyo al desarrollo de cursos organizados por personal CSIC



Colaboración público-privada

- Contribuir a enriquecer la colaboración entre los sectores público y privado en el ámbito de la investigación científica y técnica, propiciando nuevas formas de relación y facilitando que se lleve a cabo con una mayor intensidad y eficacia
- Organizar jornadas de reflexión de alto impacto para propiciar un cambio cultural en la manera en que colaboran sector público y privado:
 - “Hacia un compromiso público-privado en investigación. Encuentro UIMP. 5-6 septiembre 2013”
Presentación de conclusiones a la SE de Investigación, Desarrollo e Innovación
 - “Compromiso público-privado en investigación y para la sociedad”. Encuentro UIMP. 24-25 julio 2014
 - Ciclo de conferencias “Las empresas que diseñan el futuro” en colaboración con la Fundación PONS
 - Jornadas sobre filantropía y RSE
- Impulsar iniciativas integradas público-privadas en investigación e innovación





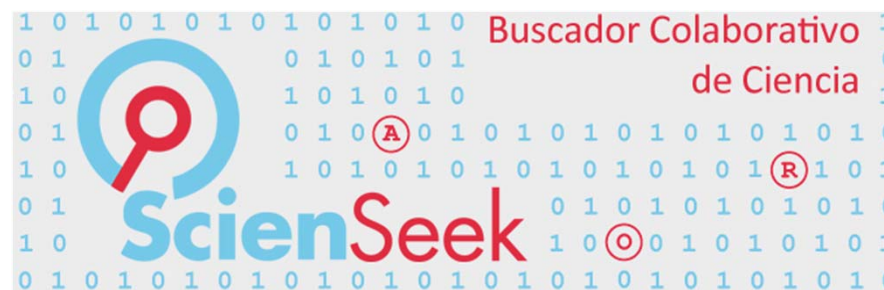
ComFuturo
Ciencia, Juventud
y Talento

Un compromiso público-privado
con la ciencia y el futuro



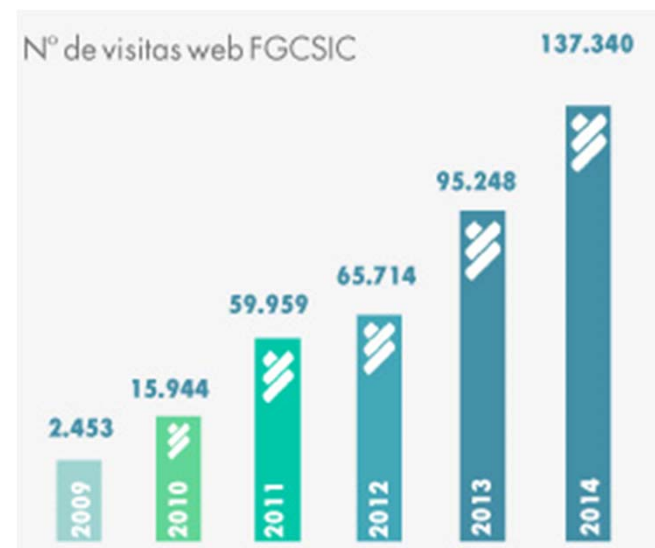
Otros

- FGCSIC miembro de Forética: red global de empresas y profesionales comprometidos con el desarrollo sostenible a través de la RSE
- Red PIDI: FGCSIC nodo de esta red, coordinada por CDTI, para asesoramiento a empresas sobre ayudas públicas de I+D+i
- Red de Asesores Tecnológicos: instrumento de apoyo y asesoramiento a la FGCSIC. 10 expertos CSIC y de otros entornos
- ScienSeek: herramienta informática de la FGCSIC para la búsqueda de contenidos web relacionados con la investigación científica. A disposición, de forma gratuita, para todas las personas e instituciones interesadas
- Colaboración en Premios de divulgación científica (Centro Nacional de Física de Partículas, Astropartículas y Nuclear, CPAN)
- Colaboración en Premios CSIC-Canarias de Divulgación Científica y CSIC-Obra Social “La Caixa” de Periodismo Universitario
- Organización del acto informativo sobre financiación por la Fundación Ramón Areces de proyectos de investigación sobre Enfermedades Raras desarrollados por grupos CSIC
- Colaboración con la Fundación Ramón Areces en la organización del simposio internacional FRA “Química: respuestas para un mundo mejor”
- Apoyo a la XXIV Carrera de la Ciencia
- Blog “Envejecer en positivo”: ~17 000 visitas;
10 veces Blog destacado del día en Madri+d



Comunicación y difusión

- Comunicar las actividades de la FGCSIC a la sociedad
 - Web actualizada y dinámica, con subida constante de noticias e imágenes
 - Presencia activa en las Redes Sociales con número creciente de seguidores
 - Difusión de las actuaciones FGCSIC vía agencias de comunicación, prensa, radio y televisión
 - Organización de actos de gran repercusión
 - Apertura hacia medios de comunicación económicos y de RSE
 - Alianzas con medios de comunicación (RTVE, A3 media) y otras entidades de interés (Madri+d, COTEC, Fundación PONS, etc.)
 - Presencia en asociaciones (AEF), plataformas y eventos de interés
 - Ediciones propias
- Apoyar la visibilidad de nuestros patronos
 - En especial, CSIC
 - Actuaciones de nuestros otros Patronos de apoyo a ciencia e I+D+i
- Promover y divulgar la ciencia, la investigación científica y la innovación



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Actividad Prioritaria de Mecenazgo

El 6 de noviembre de 2014 la Agencia Tributaria ha resuelto reconocer a la Fundación General CSIC como entidad que realiza Actividad Prioritaria de Mecenazgo consignada en la Disposición Adicional Quincuagésima Primera. Uno. 9ª de la Ley 22/2013, de 23 de diciembre de Presupuestos Generales del Estado para el año 2014 así como los años sucesivos, siempre que las respectivas Leyes de Presupuestos consideren la I+D+i orientada a resolver los retos de la sociedad identificados en la Estrategia Española de Ciencia y Tecnología y de Innovación para 2013-2020 como Actividad Prioritaria de Mecenazgo



Los donativos a la FGCSIC tendrán una deducción superior (40%) a la normal (35%) sobre la cuota íntegra del Impuesto de Sociedades.

Aplicable a los primeros 50.000 € de aportación anual

ComFuturo

- Un programa de colaboración público-privada creado por la Fundación General CSIC que tiene por objeto dar respuesta al desempleo de jóvenes científicos altamente cualificados, captando el mejor talento joven investigador y haciendo posible que desarrolle proyectos de alcance en Centros e Institutos del CSIC, con el apoyo económico de entidades privadas.

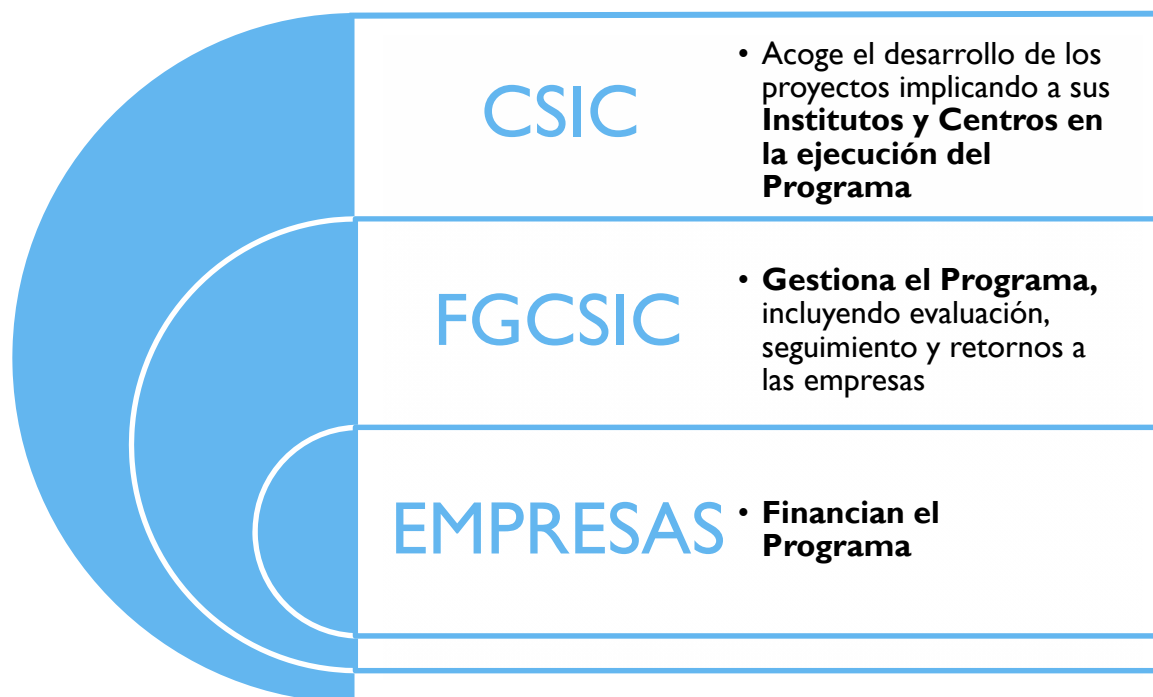


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Entidades involucradas



Qué se busca



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Algunas reflexiones dirigidas a la empresa

¿Consentimos que se pierda una generación de jóvenes talentos científicos?

¿Aceptamos sin más un futuro comprometido o nos comprometemos con él?

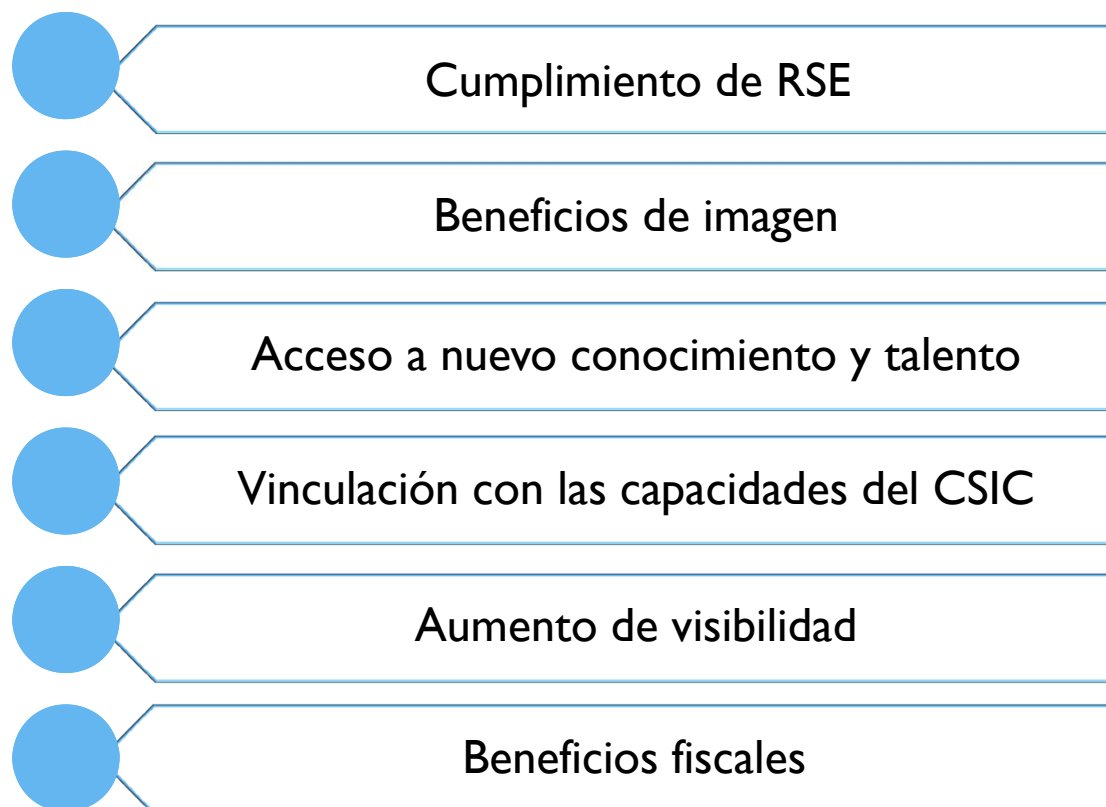
Al apoyar a ComFuturo damos respuesta a estos desafíos y contribuimos al progreso de la ciencia española y de nuestra sociedad



Empresas comprometidas

Tipo de empresa	Nº proyectos financiados	Aportación/año
EMPRESA COLABORADORA	1-3	50.000 -150.000 €
EMPRESA ESTRATÉGICA	≥ 4	≥ 200.000 €

Beneficios



Captación de financiación privada

Primera convocatoria

140 entidades **contactadas**
80 entidades **visitadas**
8 entidades **comprometidas**

Financiación privada
obtenida:

2.100.000 €



Lanzamiento 11-02-2015

Primera convocatoria

14 ayudas:

Agroquímica

1 ayuda

Biocidas nanoparticulados para desinfección de aguas

1 ayuda

Enfermedades inflamatorias autoinmunes

1 ayuda

Nuevas tecnologías para detección temprana de cáncer

1 ayuda

Soluciones catalíticas de bajo coste para la industria del gas

1 ayuda

General

9 ayudas

Acto en el CSIC con la asistencia y participación de **representantes de las empresas innovadoras** implicadas y amplia **presencia y repercusión mediática**



La hoja de ruta

Captación de financiación privada de empresas comprometidas

Convocatoria dirigida a jóvenes científicos

Evaluación transparente, independiente y objetiva

Desarrollo de proyectos de investigación en el CSIC