

INVESTIGATION AND ANALYSES OF INTERNAL VALIDITY IN DANISH PRECLINICAL RESEARCH



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INTERNAL VALIDITY

...the extent to which the design and conduct of an experiment eliminate the risk of introducing bias...
van der Worp et al, 2010

Risk of bias:

.. The overall risk that we over- or underestimate the true effect of an intervention

Different examples of bias:

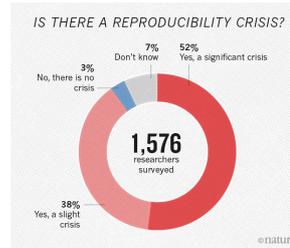
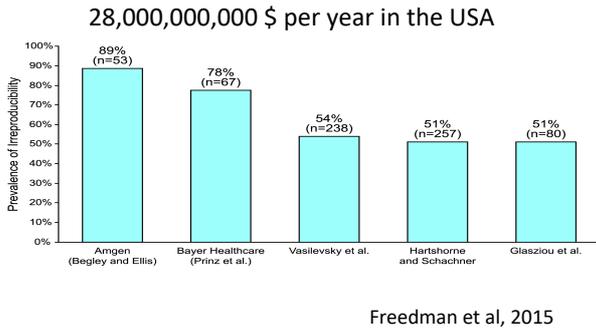
Selection

Detection

Attrition

2

THE REPRODUCIBILITY CRISIS IN SCIENCE



Monya Baker

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doi:10.1038/nature11556

nature International weekly journal of science

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NATURE | NEWS

Poorly designed animal experiments in the spotlight

High-status journals or institutions no guarantees of carefully-reported trials.

Robert Hutcheon, John Huguenaire, John Macleod, Malcolm R. Macleod, John D. Porter, Oswald Steward

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A Risk of bias

Risk of bias category	Prevalence of reporting (%)
Rand	~18
Blind	~5
SSC	~2
Col	~10

B Randomisation

Year of publication	Prevalence of reporting (%)
1941-78	~10
1979-88	~12
1989-99	~15
2000-07	~28
2008-12	~35

C Blinded assessment of outcome

Year of publication	Prevalence of reporting (%)
1941-78	~5
1979-88	~8
1989-99	~10
2000-07	~15
2008-12	~25

D Conflict of interest reporting

Year of publication	Prevalence of reporting (%)
1941-78	~5
1979-88	~8
1989-99	~10
2000-07	~15
2008-12	~40

PLOS BIOLOGY
FIFTEENTH ANNIVERSARY

BROWSE PUBLISH ABOUT

OPEN ACCESS
PERSPECTIVE

Risk of Bias in Reports of In Vivo Research: A Focus for Improvement

Malcolm R. Macleod, Aaron Lawson McLean, Aikaterini Kyriakopoulou, Stylianos Serghiou, Arno de Wilde, Nicki Sherratt, Theo Hirst, Rachel Hemblade, Zsanett Bahor, Cristina Nunes-Fonseca, Aparna Potluru, Andrew Thomson, Julija Baginskaitė, [...], Emily S. Sena [view all]

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AIM & METHOD

AIM:

- ...to convey the interval validity of a random sample of papers from 2009 / 2018.
- ...assess compliance with legislation and the 3Rs

METHOD:

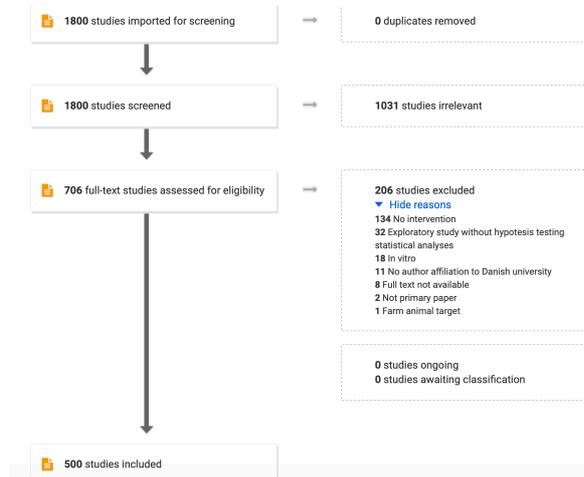
- ...use a modified quality assessment tool

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STATUS



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PERSPECTIVES

...a responsible step in the identification of plausible deficits in implementing reduction in Danish research

...quantification will be an impetus to researchers to plan and report ongoing and future studies in a manner that improves internal validity and thus corroborates the implementation of reduction

...limit bias, better clinical translatability, more reliable effect sizes and reduce the number of animals wasted in poorly conducted experiments

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ACKNOWLEDGEMENTS



AU Library



Collaborative Approach to Multi-Analyte Data
C·A·M·A·R·A·D·E·S
Centre of Animal Data-Driven Experimental Studies

Danish 3R-Center
RRR
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