

BETTER RESEARCH BY APPLYING SYNTHESIS OF EVIDENCE

Focus on High Research Quality and Translation as well as a Culture of Care
by Implementing "AUGUST"



– a new powerful initiative at
AARHUS UNIVERSITY

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AARHUS UNIVERSITY

The Oxford Advanced Dictionary's definition of "synthesis":
The combination of components or elements to form a connected whole...

CIHR's Definition of SYNTHESIS:

"The contextualization and integration of research findings of individual research studies within a larger body of knowledge on the topic..." "...must be reproducible and transparent..."

THE NCADs definition of synthesis of evidence:

...the synthesis of relevant literature and expertise in order to arrive at scientific, well-substantiated and accesible summaries of the information that is available before research commences...



- A narrative review
- A systematic review
- Databases on animal models
- A consensus conference
- An expert panel



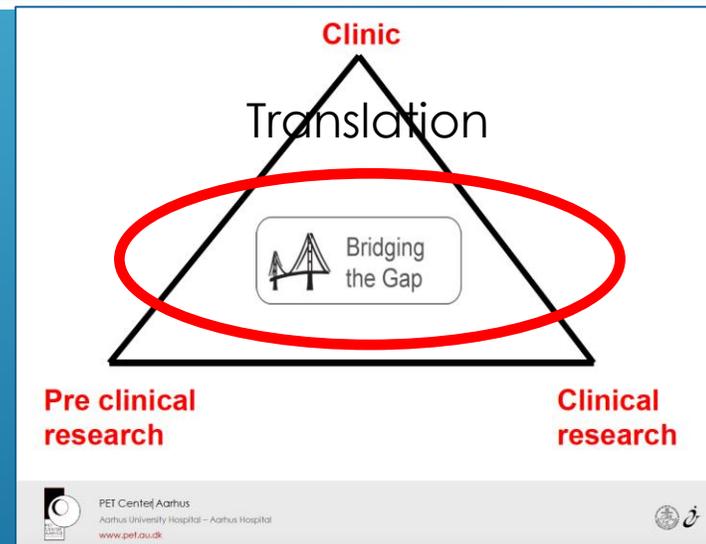
DEPARTMENT OF CLINICAL MEDICINE

From basic research to clinical application

Formally established in 1972

140 full-time professors and associate professors
300 clinical and external associate professors

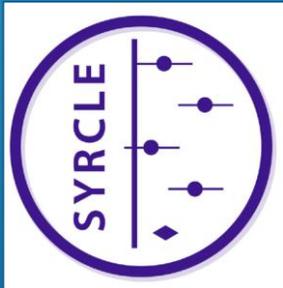
Approx. 2,100 publications annually



An upgrade of Animal Experimental Research Facilities • Research • Education

Input from
three
international
organizations/
groups:

- SYRCLE
- AAALAC
- FELASA



November 27th 2013 • 8.30 am – 3pm

AARHUS UNIVERSITY • HEALTH

AIAS • Høgh-Guldbergs Gade 6B • building 1632

DK-8000 Aarhus C

SYStematic Review Centre for
Laboratory animal Experimentation



No. of animal studies online

Isaac Newton: "If I have seen further, it is by standing on the shoulders of giants"

A Systematic Review

Is an evidence-based literature search based on a single research question
It puts the same level of rigor to reviewing research evidence as should be used producing the research in the first place

Meta-analyses

Is the use of statistical methods to summarize the results of independent studies

A Narrative Review

- Subjective method
- General review question
- No specified study selection
- No attempt to avoid bias
- No combined data analysis
- The authors view of the topic substantiated by other researchers' results

A Systematic Review

- Evidence based method
- Specific review question
- Transparent study selection
- Risk of bias analysis
- Meta-analysis of data



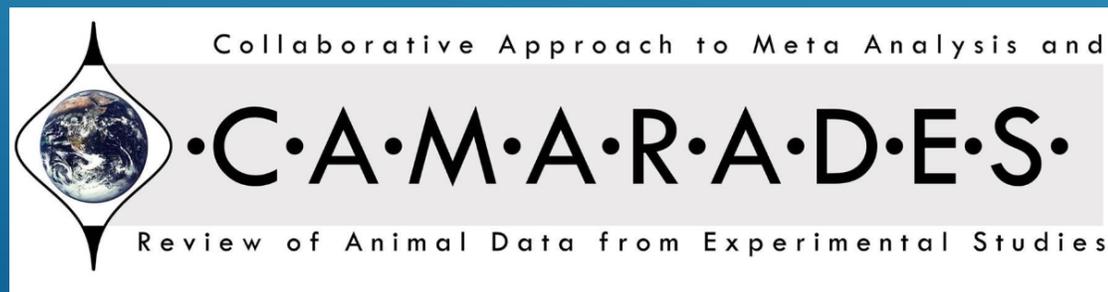
Common in clinical practice
Numbers on animal studies on the rise

WHY IS THIS OF INTEREST?

*“Why does everything work in animals
and nothing works in humans.....”*

...Translational Failure in Stroke Research...

- 600 drugs tested for efficacy in animal models of focal cerebral ischemia
- 374 drugs positive results in preclinical animal studies
- 97 tested in clinical trials but only **1** drug effective in humans



O'Collins VE, et al, Ann Neurol 2006

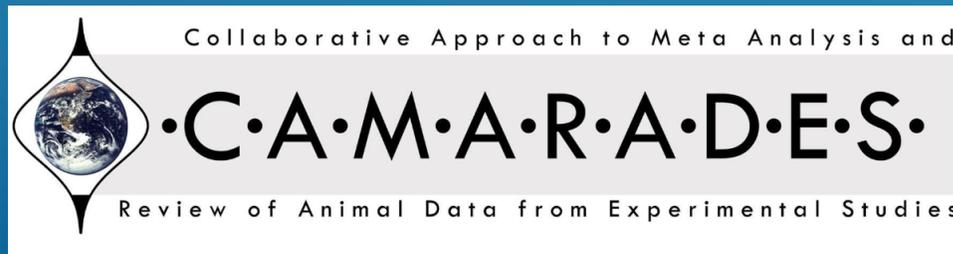
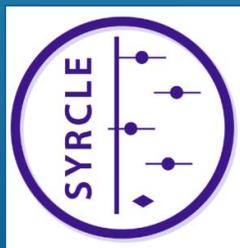
SYSTEMATIC REVIEWS HAS PUT FOCUS ON REASONS WHY TRANSLATION IS FAILING:

- Insufficient reporting
- Poor methodological quality
- Publication bias
- Differences in experimental design
- Biological differences





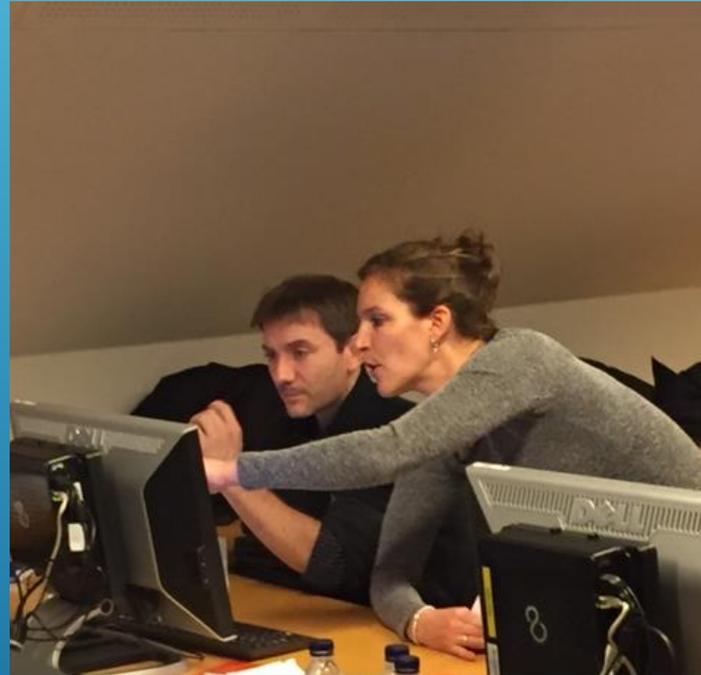
A SYMPOSIUM AND A WORKSHOP - THE 17TH & 18TH OF NOVEMBER 2015



THE WORKSHOP WAS A SUCCESS



A vision to make a difference



Enthusiasm



Focus & dedication

“Synthesis of evidence” involve the following steps:

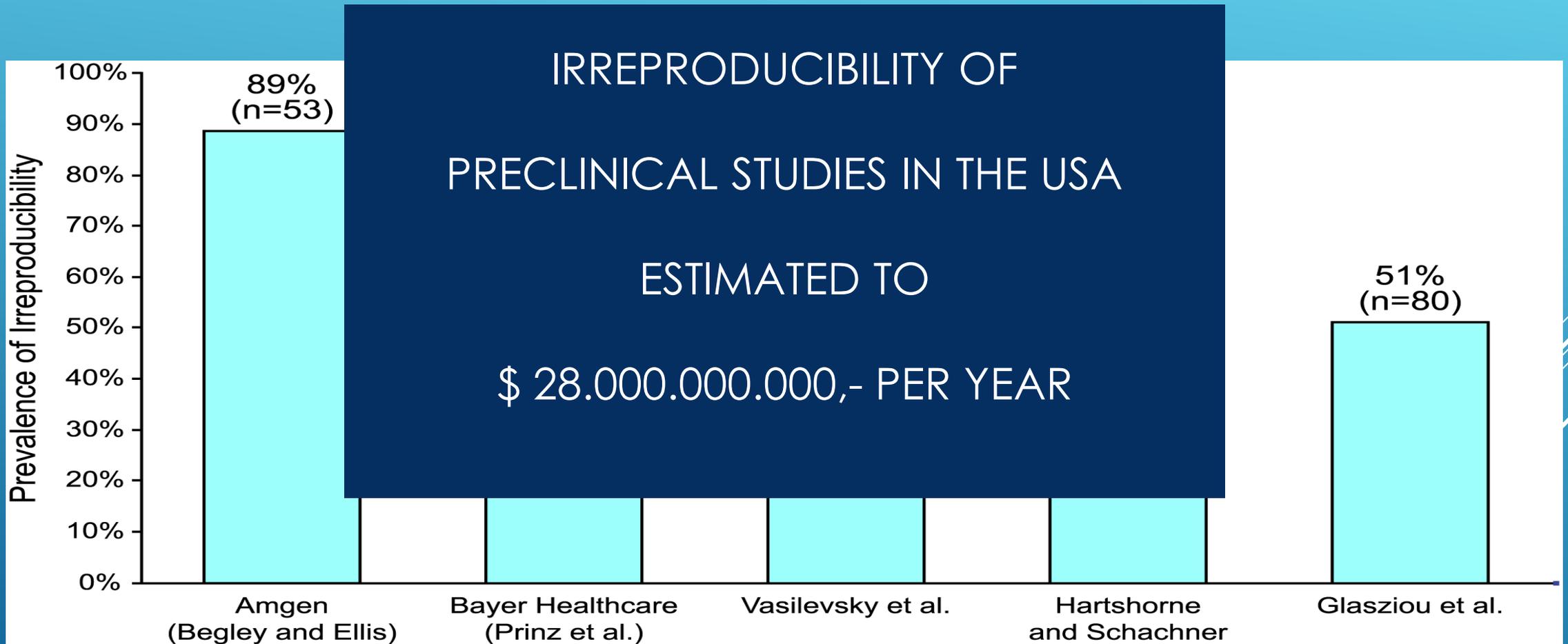
- State the objectives of the research
- Define eligibility criteria for studies to be included
- Identify all potentially eligible studies
- Apply eligibility criteria
- Assemble the most complete data set feasible;
 - Data extraction
 - Quality appraisal
- Analyze this data by use of statistical synthesis and sensitivity analyses if appropriate and possible
- Prepare a structured report of the research

⇒ **This approach is very time consuming - but leads to good and well-cited publications**

⇒ **It involves an interdisciplinary team - which is a major advantage**

⇒ **Time is money - shortterm versus longterm thinking – we must think longterm...**

It is important that we dare to discuss, respond to the critique e.g.:
Irreproducibility of preclinical studies



Cumulative meta-analyses of animal studies

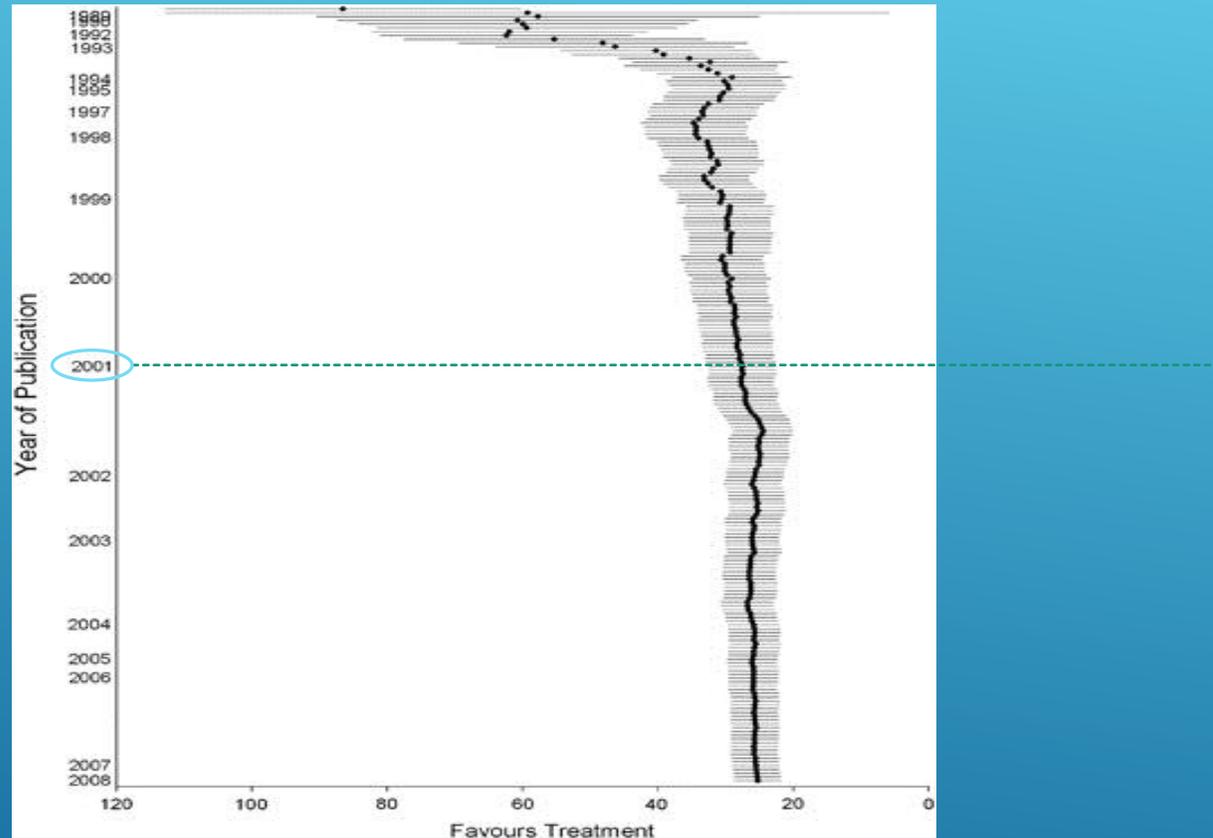


Figure 3 Cumulative meta-analysis; studies included by publication date and the effect of this on the estimate of efficacy.

All stakeholders should take responsibility to improve the research quality and the translational value as well as strive for a culture of care (the 3Rs):

Researchers, Research Funders, Regulators, Sponsors and Publishers of research

- **Universities should be encouraged to** => build a firm organizational structure (backing from leadership)
=> Introduce a new approach to how researchers are evaluated
- **National authorities should help to keep this an area of priority** => the 3R centers, research councils
- **Funds and regulators should allocate financial support to** improve education, research and researchers & allow thorough studies
- **Publishers must be encouraged to** focus on higher standards (systematic reviews and ARRIVE) and integrate negative results in journals
- **Establish a strong national and international network with focus on synthesis of evidence/ knowledge**
=> Use already existing networks

We can work on this internationally – ALREADY ESTABLISHED INITIATIVES:

The Evidence Based Research Network

A number of studies show that **researchers, research funders, regulators, sponsors and publishers of research fail to use earlier research** when preparing to start, fund, regulate, sponsor or publish the results of new studies. To embark on research without systematically reviewing the evidence of what is already known, particularly when the research involves people or animals, is **unethical, unscientific, and wasteful**.

An international network established in Bergen, Norway in Dec 2014 with initial partners from Australia, Canada, Denmark, the Netherlands, Norway, the UK, and USA.

<http://ebrnetwork.org>



Evidence Synthesis International

Our mission is to connect and **support both the organizations and people that produce evidence syntheses around the world**.

Our scope is broad, from human health to conservation, and education to veterinary medicine we are the globally hub where evidence synthesis organization meet to build capacity, and share resources.

Officially founded in London 2016

<https://evidencesynthesis.org>

ACKNOWLEDGEMENTS



The AUGUST initiative:

Will continue to establish a "research and knowledge center" that works on both improving animal welfare and science and translation - nationally and internationally

Next symposium & workshop will be the 6th & 7th of April 2017 in Aarhus

A challenge will be funding and a change of perspective in the scientific environment



Head of Dept. Kristjar Skajaa & Prof. Gregers Wegener
Our collaborators from

