The Danish 3R Survey
Knowledge, attitudes and experiences with the 3Rs among researchers involved in animal experiments in Denmark

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Photo: Getty Images
Background and research aim

• The 3Rs will soon celebrate 60 years anniversary
• The 3Rs are important tools animal welfare regulation
• Yet, there is limited knowledge about:
  • Actual implementation
  • Barriers to further implementation

Research aim: to survey animal researchers knowledge, attitudes and experiences with the 3Rs in Denmark and their view of the Danish 3R-Center

Funded by the Danish 3R-Center

Project group: Jesper Lassen, Thomas B. Lund & Rikke Nøhr (University of Copenhagen).

Thanks to: Lisbeth E. Knudsen, Jan L. Ottesen & Tom Bengtsen. (Advisory group).
Design and methods

Data production
  • A web-based questionnaire (anonymous) in October 2015

Population: Animal researchers
  • All holding a Danish license to carry out animal experiments
  • All scientists working under another's licence

Recruitment
  • Licence holders: Through the central register of licence holders
  • Non-licence holders: Snowballing and posts at workplaces
Demography of the respondents

Total sample
→ 234

Gender
→ 50% male // 50% female

Function
→ 72% licence holders (=37% r-rate) // 28% non-licence-holder

Place of work
→ 66% public sector // 31% private sector // 3% both sectors

Size of workplace (private sector only)

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Share of respondents (%)</th>
</tr>
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<tbody>
<tr>
<td>1-100</td>
<td>24</td>
</tr>
<tr>
<td>101-1.000</td>
<td>15</td>
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<tr>
<td>1001-10.000</td>
<td>25</td>
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<tr>
<td>10.000-</td>
<td>35</td>
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Knowledge and attention
Self reported knowledge

- Self reported knowledge of the 3Rs is high
- Significant difference between sectors

How well would you say you know the 3Rs?

- Private sector:
  - Very well: 67%
  - Well: 32%
  - Not very well: 1%

- Public sector:
  - Very well: 54%
  - Well: 11%
  - Not very well: 8%

- Total:
  - Very well: 45%
  - Well: 47%
  - Not very well: 8%

(N_{total} = 234; N_{sector} = 226; p = 0.00)
Factual knowledge
Reduction

Which of the following definitions fits your understanding of REDUCTION?

- Obtaining comparable levels of information in your experiment while using fewer animals
- Reducing the number of animals used per experiment
- Obtaining more information in your experiment while using the same number of animals
- Reducing the overall number of animals used in research overall in Denmark
- Reducing the degree of pain and suffering caused to animals by your procedures

Private sector  Public sector  Total

N_{total} = 234; N_{sector} = 226; ns
Factual knowledge
Replacement

Which of the following definitions fits your understanding of REPLACEMENT?

- Replacing animals with in vitro techniques
- Redesigning experiments in order to avoid the use of animals
- Replacing animals with computer modelling techniques
- Replacing vertebrates with invertebrates
- Replacing higher mammals with lower mammals

N_{total}=234; N_{sector}=226
Factual knowledge
Refinement

Which of the following definitions fits your understanding of REFINEMENT?

- Improving procedures so that the animals experience less pain and suffering
- Improving animal welfare by minimizing suffering and providing better housing conditions
- Improving the conditions in which animals are kept
- Improving experiments so that fewer animals are used
- Improving experiments to yield better data

Incorrect

N_{total}=234; N_{sector}=226; p<0.05
Knowledge seeking

How many times have you participated in a seminar, conference and/or workshop about the 3Rs?

Private sector
- More than 10 times: 13%
- 6-10 times: 15%
- 3-5 times: 29%
- 1-2 times: 33%
- Never: 10%

Public sector
- More than 10 times: 5%
- 6-10 times: 12%
- 3-5 times: 38%
- 1-2 times: 42%
- Never: 31%

Total
- More than 10 times: 7%
- 6-10 times: 7%
- 3-5 times: 18%
- 1-2 times: 37%
- Never: 31%

(N_{total} = 234; N_{sector} = 226; p < 0.05)
Awareness during daily work

When do you consider the 3Rs in your work?

When applying for ethical review:
- Private sector
- Public sector
- Total

When in physical contact with animals:
- Private sector
- Public sector
- Total

When applying for funding:
- Private sector
- Public sector
- Total

When submitting license applications:
- Private sector
- Public sector
- Total

All the time:
- Private sector
- Public sector
- Total

When attending conferences etc.:
- Private sector
- Public sector
- Total

When considering compliance:
- Private sector
- Public sector
- Total

(N_{total}=234; N_{sector}=226; p=0.00)
Needs and obstacles
Obstacles – overall

What is the main obstacle to implementing the 3R?

- Total:
  - Lack of appropriate scientific or technological innovation: 25%
  - Comparability of data: 18%
  - Lack of time due to other duties: 5%
  - Insufficient funding available: 6%
  - Legislation or regulatory requirements: 6%
  - There are no obstacles: 30%
  - Other obstacle: 9%

- Public sector:
  - Lack of appropriate scientific or technological innovation: 29%
  - Comparability of data: 21%
  - Lack of time due to other duties: 3%
  - Insufficient funding available: 10%
  - Legislation or regulatory requirements: 3%
  - There are no obstacles: 26%
  - Other obstacle: 9%

- Private sector:
  - Lack of appropriate scientific or technological innovation: 17%
  - Comparability of data: 13%
  - Lack of time due to other duties: 10%
  - Insufficient funding available: 0%
  - Legislation or regulatory requirements: 15%
  - There are no obstacles: 40%
  - Other obstacle: 6%

N_{total} = 234; N_{sector} = 226; p < 0.05

Legend:
- Blue: Lack of appropriate scientific or technological innovation
- Red: Comparability of data
- Green: Lack of time due to other duties
- Purple: Insufficient funding available
- Teal: Legislation or regulatory requirements
- Orange: There are no obstacles
- Light blue: Other obstacle
Replacement Needs

What would allow you to continue to achieve your research objectives without using animals?

- More predictive computer models
- Increased funding to develop alternatives
- A system for conducting literature searches for replacements
- Legislative or other regulatory change

What would allow you to continue to achieve your research objectives without using animals?

Nothing, my work demands that I look at the whole animal system

N=234

N_{total} = 234; N_{sector} = 226; p < 0.05
Danish 3R-Center
Doing a good job?

To what extent do you agree with the following statements?

1. The Danish 3R Center is important for people working with animal experiments
   - Strongly agree: 14%
   - Agree: 23%
   - Neither agree or disagree: 45%
   - Disagree: 15%
   - Strongly disagree: 3%
   - Don't know: 1%

2. We don't need an institution like the Danish 3R Center
   - Strongly agree: 9%
   - Agree: 21%
   - Neither agree or disagree: 38%
   - Disagree: 7%
   - Strongly disagree: 2%
   - Don't know: 23%

3. The Danish 3R Center does a good job developing networks among scientists
   - Strongly agree: 23%
   - Agree: 42%
   - Neither agree or disagree: 24%
   - Disagree: 4%
   - Strongly disagree: 1%
   - Don't know: 12%

4. The Danish 3R Center is not visible in debates about the 3Rs
   - Strongly agree: 15%
   - Agree: 23%
   - Neither agree or disagree: 47%
   - Disagree: 2%
   - Strongly disagree: 1%
   - Don't know: 15%

N=234
The Danish 3-R Center
Desired activities!

Where should the Danish 3R Center focus its activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Private sector</th>
<th>Public sector</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge dissemination to researchers</td>
<td>36%</td>
<td>58%</td>
<td>52%</td>
</tr>
<tr>
<td>Knowledge disseminating to laboratory staff and animal keepers</td>
<td>15%</td>
<td>30%</td>
<td>26%</td>
</tr>
<tr>
<td>Facilitating networks across the public and private sector</td>
<td>43%</td>
<td>22%</td>
<td>28%</td>
</tr>
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</table>

N=234
Conclusion and points of action

• Knowledge and understanding of the 3Rs is high
• There is a significant difference between private and public sector researchers
  • Cultural differences?
  • Structural/ economic differences?
• Most do not consider replacement an option
  • Maybe because of the nature of their work: they all use animals...

Points of action

• Communication/ information must be tailored according to cultures/ conditions of the two sectors
  • Increase funds for public researchers in replacement
  • Encourage research into computer models
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Thank you for your attention!