

Animal research: Battle scars

By Daniel Cressey

This spreadsheet presents summary results of a *Nature* survey on attitudes to animal research among biomedical scientists. Roughly 20,000 biologists were e-mailed on 10 January 2011 and invited to take part in the poll. Potential respondents were promised anonymity and were given the option of entering a prize draw to win £100 (US\$150) of Amazon vouchers, not dependent on their participation. A second invitation was attached to the Nature Alerts e-mail on 19 January. The poll closed on 24 January.

For a full discussion of this survey, see the News Feature 'Battle scars' (*Nature* 470, 452–453; 2011) at go.nature.com/lwkuix.

Questions asked of all respondents.

Do you conduct experiments on animals?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	179	67.5%	36	54.5%	216	74.7%	258	71.7%
No	86	32.5%	30	45.5%	73	25.3%	102	28.3%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

With what kind of animals do you work?

	United States		United Kingdom		Other Europe		Rest of World	
Invertebrates	22	12.3%	9	25.0%	18	8.3%	33	12.8%
Non-mammalian verte	17	9.5%	6	16.7%	25	11.6%	40	15.5%
Mammals: mice/rats	147	82.1%	26	72.2%	178	82.4%	208	80.6%
Mammals: rabbits	18	10.1%	1	2.8%	14	6.5%	45	17.4%
Mammals: dogs	7	3.9%	1	2.8%	7	3.2%	11	4.3%
Mammals: pigs	8	4.5%	1	2.8%	14	6.5%	13	5.0%
Mammals: non-humar	15	8.4%	1	2.8%	4	1.9%	18	7.0%
Mammals: other (plea	10	5.6%	4	11.1%	10	4.6%	32	12.4%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

Questions asked only of respondents who reported working with animals.

What does your work involve?

	United States		United Kingdom		Other Europe		Rest of World	
Observation	85	47.5%	19	52.8%	100	46.3%	132	51.2%
Genetic modification	67	37.4%	18	50.0%	87	40.3%	84	32.6%
Surgery	94	52.5%	14	38.9%	99	45.8%	98	38.0%
Administering drugs	116	64.8%	20	55.6%	126	58.3%	151	58.5%
Administering anaest	97	54.2%	17	47.2%	96	44.4%	105	40.7%
Taking blood/tissue s	142	79.3%	25	69.4%	159	73.6%	194	75.2%
Other (please specify	37	20.7%	8	22.2%	45	20.8%	47	18.2%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

Do you have ethical concerns about the role of animals in your current research?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	40	22.3%	6	16.7%	68	31.5%	112	43.4%
No	139	77.7%	30	83.3%	148	68.5%	146	56.6%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

Do you feel able to freely discuss any concerns you may have regarding the ethics of animal research with your peers or superiors within your institution?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	166	92.7%	35	97.2%	206	95.4%	234	90.7%
No	13	7.3%	1	2.8%	10	4.6%	24	9.3%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

During the course of your career, have you ever had misgivings about the role of animals in any research you conducted or were asked to conduct?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	33	18.4%	4	11.1%	32	14.8%	38	14.7%
No	146	81.6%	32	88.9%	184	85.2%	220	85.3%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

Did your misgivings lead you to change what you were doing?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	11	33.3%	0	0.0%	23	71.9%	20	52.6%
No	22	66.7%	4	100.0%	9	28.1%	18	47.4%
Total	33	100.0%	4	100.0%	32	100.0%	38	100.0%

During your career, have you or anyone you know been affected negatively by animal-rights activists?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	54	30.2%	12	33.3%	57	26.4%	46	17.8%
No	125	69.8%	24	66.7%	159	73.6%	212	82.2%
Total	179	100.0%	36	100.0%	216	100.0%	258	100.0%

Did you change the direction or practice of your research as a result?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	8	14.8%	1	8.3%	9	15.8%	8	17.4%
No	46	85.2%	11	91.7%	48	84.2%	38	82.6%
Total	54	100.0%	12	100.0%	57	100.0%	46	100.0%

Questions asked only of respondents who did not report working with animals.

Do you have ethical concerns about the role of animals in research?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	51	59.3%	15	50.0%	44	60.3%	69	67.6%
No	35	40.7%	15	50.0%	29	39.7%	33	32.4%
Total	86	100.0%	30	100.0%	73	100.0%	102	100.0%

Have your concerns influenced the research you choose to do?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	28	54.9%	7	46.7%	17	38.6%	32	46.4%
No	23	45.1%	8	53.3%	27	61.4%	37	53.6%
Total	51	100.0%	15	100.0%	44	100.0%	69	100.0%

During your career, have you or anyone you know been affected negatively by animal-rights activists?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	19	22.1%	15	50.0%	11	15.1%	14	13.7%
No	67	77.9%	15	50.0%	62	84.9%	88	86.3%
Total	86	100.0%	30	100.0%	73	100.0%	102	100.0%

Have the actions of animal-rights activists influenced the research you chose to do?

	United States		United Kingdom		Other Europe		Rest of World	
Yes	1	5.3%	2	13.3%	0	0.0%	2	14.3%
No	18	94.7%	13	86.7%	11	100.0%	12	85.7%
Total	19	100.0%	15	100.0%	11	100.0%	14	100.0%

Questions asked of all respondents

Does your institution encourage you to communicate with the general public about your work?

	United States		United Kingdom		Other Europe		Rest of World	
It encourages commu	63	23.8%	17	25.8%	97	33.6%	102	28.3%
It encourages commu	57	21.5%	30	45.5%	57	19.7%	113	31.4%
It encourages me not	22	8.3%	4	6.1%	18	6.2%	26	7.2%
It has not showed a p	123	46.4%	15	22.7%	117	40.5%	119	33.1%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you discuss the research you do with the general public?

	United States		United Kingdom		Other Europe		Rest of World	
I only discuss researc	41	15.5%	14	21.2%	57	19.7%	74	20.6%
I only discuss researc	7	2.6%	5	7.6%	23	8.0%	31	8.6%
I discuss research wit	70	26.4%	19	28.8%	65	22.5%	79	21.9%
I have not had the opp	135	50.9%	26	39.4%	128	44.3%	161	44.7%
I have had the opport	12	4.5%	2	3.0%	16	5.5%	15	4.2%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

To what extent do you agree or disagree with the following statement? "Research involving animal experimentation is essential to the advancement of biomedical science"

	United States		United Kingdom		Other Europe		Rest of World	
Strongly agree	204	77.0%	43	65.2%	168	58.1%	204	56.7%
Agree	42	15.8%	19	28.8%	97	33.6%	122	33.9%
Neither agree nor disa	11	4.2%	3	4.5%	15	5.2%	20	5.6%
Disagree	6	2.3%	0	0.0%	8	2.8%	11	3.1%
Strongly disagree	2	0.8%	1	1.5%	1	0.3%	3	0.8%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

To what extent do you agree or disagree with the following statement? "Animal-rights activists present a real threat to essential biomedical research"

	United States		United Kingdom		Other Europe		Rest of World	
Strongly agree	90	34.0%	21	31.8%	44	15.2%	58	16.1%
Agree	89	33.6%	31	47.0%	105	36.3%	126	35.0%
Neither agree nor disa	52	19.6%	8	12.1%	85	29.4%	103	28.6%
Disagree	29	10.9%	6	9.1%	50	17.3%	62	17.2%

Strongly disagree	5	1.9%	0	0.0%	5	1.7%	11	B3.1%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you consider the legislation governing the use of animals in research in your country to be:

	United States		United Kingdom		Other Europe		Rest of World	
Far too strict	11	4.2%	5	7.6%	6	2.1%	8	2.2%
Too strict	52	19.6%	14	21.2%	42	14.5%	32	8.9%
About right	163	61.5%	37	56.1%	189	65.4%	207	57.5%
Not quite strict enough	19	7.2%	7	10.6%	36	12.5%	70	19.4%
Not at all strict enough	8	3.0%	1	1.5%	9	3.1%	25	6.9%
I don't know	12	4.5%	2	3.0%	7	2.4%	18	5.0%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you think that the laws and regulations governing the use of animals in research in the past five years in your country have:

	United States		United Kingdom		Other Europe		Rest of World	
Become far more rest	51	19.2%	12	18.2%	44	15.2%	36	10.0%
Become slightly more	110	41.5%	27	40.9%	146	50.5%	152	42.2%
Remained about the s	69	26.0%	20	30.3%	77	26.6%	123	34.2%
Become slightly less	2	0.8%	1	1.5%	2	0.7%	10	2.8%
Become far less restr	0	0.0%	0	0.0%	2	0.7%	6	1.7%
I don't know	33	12.5%	6	9.1%	18	6.2%	33	9.2%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you think that laws and regulations defining punishment for animal-rights activists who break the law in your country are:

	United States		United Kingdom		Other Europe		Rest of World	
Far too harsh	6	2.3%	0	0.0%	3	1.0%	9	2.5%
A bit too harsh	13	4.9%	4	6.1%	7	2.4%	23	6.4%
About right	59	22.3%	22	33.3%	90	31.1%	114	31.7%
A bit too lenient	71	26.8%	18	27.3%	59	20.4%	51	14.2%
Far too lenient	45	17.0%	13	19.7%	35	12.1%	41	11.4%
I don't know	71	26.8%	9	13.6%	95	32.9%	122	33.9%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

To what extent do you agree or disagree with the following statement? "Polarized views of animal research make it difficult to voice a nuanced opinion on the subject — for example, one that supports most research, but has reservations about some of it"

	United States		United Kingdom		Other Europe		Rest of World	
Strongly agree	68	25.7%	18	27.3%	63	21.8%	51	14.2%
Agree	138	52.1%	38	57.6%	138	47.8%	197	54.7%
Neither agree nor disa	44	16.6%	4	6.1%	68	23.5%	89	24.7%
Disagree	14	5.3%	4	6.1%	18	6.2%	21	5.8%
Strongly disagree	1	0.4%	2	3.0%	2	0.7%	2	0.6%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you think that the level of debate about animal research has changed considerably in the past five years?

	United States		United Kingdom		Other Europe		Rest of World	
Yes, the debate has in	83	31.3%	9	13.6%	96	33.2%	123	34.2%
Yes, the debate has c	30	11.3%	24	36.4%	38	13.1%	60	16.7%
No, it's remained the s	114	43.0%	28	42.4%	120	41.5%	128	35.6%
I don't know	38	14.3%	5	7.6%	35	12.1%	49	13.6%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Do you think that activity by animal-rights activists against researchers in the past five years in your country has

	United States		United Kingdom		Other Europe		Rest of World	
Greatly increased	20	7.5%	1	1.5%	6	2.1%	13	3.6%
Increased	92	34.7%	12	18.2%	76	26.3%	101	28.1%
Remained about the s	96	36.2%	19	28.8%	150	51.9%	173	48.1%
Decreased	17	6.4%	25	37.9%	25	8.7%	16	4.4%
Greatly decreased	2	0.8%	0	0.0%	1	0.3%	1	0.3%
I don't know	38	14.3%	9	13.6%	31	10.7%	56	15.6%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Please state the region in which you currently work.

	United States		United Kingdom		Other Europe		Rest of World	
United States	265	100.0%	0	0.0%	0	0.0%	0	0.0%
United Kingdom	0	0.0%	66	100.0%	0	0.0%	0	0.0%
Other Europe	0	0.0%	0	0.0%	289	100.0%	0	0.0%
Canada	0	0.0%	0	0.0%	0	0.0%	35	9.7%
South America	0	0.0%	0	0.0%	0	0.0%	46	12.8%
Oceania	0	0.0%	0	0.0%	0	0.0%	27	7.5%
Japan	0	0.0%	0	0.0%	0	0.0%	38	10.6%
China	0	0.0%	0	0.0%	0	0.0%	36	10.0%
Other Asia	0	0.0%	0	0.0%	0	0.0%	57	15.8%
Africa	0	0.0%	0	0.0%	0	0.0%	16	4.4%

Other (please specify)	0	0.0%	0	0.0%	0	0.0%	105	29.2%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

How old are you?

	United States		United Kingdom		Other Europe		Rest of World	
16-24	4	1.5%	2	3.0%	3	1.0%	13	3.6%
25-34	41	15.5%	13	19.7%	44	15.2%	79	21.9%
35-44	55	20.8%	19	28.8%	81	28.0%	90	25.0%
45-54	77	29.1%	22	33.3%	97	33.6%	99	27.5%
55-64	59	22.3%	8	12.1%	46	15.9%	60	16.7%
65+	29	10.9%	2	3.0%	18	6.2%	19	5.3%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

Please tell us which of the following is closest to your area of research.

	United States		United Kingdom		Other Europe		Rest of World	
Anatomy	2	0.8%	0	0.0%	4	1.4%	2	0.6%
Biochemistry	15	5.7%	2	3.0%	13	4.5%	23	6.4%
Bioinformatics	2	0.8%	4	6.1%	2	0.7%	6	1.7%
Biotechnology	4	1.5%	3	4.5%	5	1.7%	24	6.7%
Biophysics	1	0.4%	0	0.0%	4	1.4%	1	0.3%
Cancer research	27	10.2%	5	7.6%	27	9.3%	35	9.7%
Clinical research	7	2.6%	3	4.5%	17	5.9%	17	4.7%
Developmental biology	11	4.2%	1	1.5%	7	2.4%	9	2.5%
Drug discovery	11	4.2%	2	3.0%	9	3.1%	8	2.2%
Endocrinology	4	1.5%	0	0.0%	7	2.4%	9	2.5%
Genetics	12	4.5%	8	12.1%	14	4.8%	23	6.4%
Genomics	4	1.5%	2	3.0%	7	2.4%	9	2.5%
Immunology	28	10.6%	7	10.6%	31	10.7%	21	5.8%
Microbiology	17	6.4%	3	4.5%	11	3.8%	18	5.0%
Molecular cell biology	16	6.0%	5	7.6%	21	7.3%	22	6.1%
Neuroscience	65	24.5%	5	7.6%	51	17.6%	44	12.2%
Pharmacology	9	3.4%	4	6.1%	14	4.8%	28	7.8%
Physiology	15	5.7%	2	3.0%	17	5.9%	17	4.7%
Reproductive biology	0	0.0%	1	1.5%	2	0.7%	6	1.7%
Structural biology	3	1.1%	1	1.5%	2	0.7%	1	0.3%
Other (please specify)	12	4.5%	8	12.1%	24	8.3%	37	10.3%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

In which kind of institution do you work?

	United States		United Kingdom		Other Europe		Rest of World	
College/university	184	69.4%	42	63.6%	179	61.9%	230	63.9%
Industry/corporation	23	8.7%	4	6.1%	19	6.6%	14	3.9%
Privately funded research	12	4.5%	0	0.0%	11	3.8%	9	2.5%
Publicly funded research	24	9.1%	16	24.2%	57	19.7%	67	18.6%
Non-profit organization	13	4.9%	2	3.0%	11	3.8%	22	6.1%
Work from home (contract)	4	1.5%	0	0.0%	3	1.0%	2	0.6%
Unemployed/retired	1	0.4%	1	1.5%	2	0.7%	3	0.8%
Other (please specify)	4	1.5%	1	1.5%	7	2.4%	13	3.6%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

What is your current position?

	United States		United Kingdom		Other Europe		Rest of World	
Business consultant	2	0.8%	0	0.0%	1	0.3%	1	0.3%
Graduate student	19	7.2%	2	3.0%	18	6.2%	37	10.3%
Laboratory head	28	10.6%	6	9.1%	45	15.6%	38	10.6%
Laboratory technician	3	1.1%	1	1.5%	4	1.4%	8	2.2%
Librarian/information	1	0.4%	0	0.0%	0	0.0%	1	0.3%
Marketing manager/director	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Medical professional/clinician	15	5.7%	3	4.5%	24	8.3%	23	6.4%
Other student	0	0.0%	0	0.0%	3	1.0%	5	1.4%
Postdoctoral fellow	44	16.6%	13	19.7%	28	9.7%	20	5.6%
President/director/CEO	5	1.9%	1	1.5%	7	2.4%	6	1.7%
Professor/lecturer	81	30.6%	22	33.3%	78	27.0%	104	28.9%
Research assistant	2	0.8%	1	1.5%	6	2.1%	9	2.5%
Research scientist	47	17.7%	11	16.7%	61	21.1%	73	20.3%
Sales manager/director	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Teacher	2	0.8%	0	0.0%	0	0.0%	7	1.9%
Product/other manager	1	0.4%	2	3.0%	4	1.4%	3	0.8%
Retired/emeritus	7	2.6%	3	4.5%	4	1.4%	8	2.2%
Secondary-school teacher	0	0.0%	0	0.0%	0	0.0%	1	0.3%
Unemployed	2	0.8%	0	0.0%	2	0.7%	0	0.0%
Other (please specify)	5	1.9%	1	1.5%	4	1.4%	16	4.4%
Total	265	100.0%	66	100.0%	289	100.0%	360	100.0%

For raw, untabulated data and open-field responses, e-mail b.maher@us.nature.com.