

Ethics of Authorship: Survey among Plant Scientists

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ABSTRACT

A small quantitative survey was conducted among a small population of plant scientists (n = 68 from 35 countries) to determine some key aspects of publishing and authorship ethics to better understand what their understanding and interpretation of key aspects of these areas of study is. Eleven questions were posed and respondents could respond online with the possibility of also freely adding any additional comments as a 12th question. 74% of respondents had some form of international research collaboration, 31% of which claimed that all authors gained automatic authorship in published papers. 24-28% of respondents indicated that authorship had been provided to an English native speaker in published papers, although 56-63% of respondents found this type of co-authorship to be ethical and 65% of their institutes and funding agencies also considered this to be an ethical and valid form of authorship. 62% of respondents found a statistician to be a valid form of authorship while a surprising 16% found a ghost-writer to be a valid form of authorship. Collaboration, partnership and co-operation (CPC) are real forms of fostering stronger ties in science, both in research and in publishing. The results of this survey indicate that, at least in the plant sciences, there is a strong rift between ideologies, which may be as a result of the lack of suitable guidelines and in-depth and open discussion on these issues.

Keywords: collaboration, partnerships in science writing, English and science writing skills

Abbreviations: CPC, collaboration, partnerships and co-operation; ELA, English language assistant

INTRODUCTION

After the actual research itself, in the plant sciences, writing collaboration is one of the strongest tools for enhancing the success of an international publication and is rapidly becoming one of the forces of success in the bio-medical sciences (The Royal Society 2011). If strict ethical rules and full transparency and open communication (between all collaboration partners) are followed, collaboration, partnerships and co-operation (CPC) are an effective way to strengthen the outcome of scientific publishing (Teixeira da Silva 2011a, 2011b, 2011c). The outcome of the efforts by plant scientists, as for most scientists in the bio-medical field, is to publish their weeks, months and at times years of research efforts in a medium that would expose their findings to as wide an international audience as possible. The CPC that has now been formalized as an ethical means of advancing science quickly, efficiently and cheaply, involves the establishment of a team, usually with one key member who has ample writing, scientific, editorial and editing skills and experience (Teixeira da Silva 2011c). The key member should also be a native English speaker to tackle the multiple challenges involved with the publishing process in top peer-reviewed journals, including the paper structure, language, style, scientific content, submission process, edits, rebuttal to reviewers and all the final polishing at each and every stage of the publishing process, from inception to completion. This concept, however, is a fairly new one and relies heavily on the basis of trust, implementing, to a large degree, the Hardy-Littlewood axioms of collaboration (Teixeira da Silva and Dobránszki, unpublished). Unknown to most scientists, there is absolutely no way for an editor, reviewer, journal or publisher to verify, with any level of accuracy, the contribution made by a co-author in a manuscript, despite a signed declaration, which can easily be falsified.

The objective of this survey was to assess the understanding that plant scientists have of: a) the notions of collaborative publishing; b) the ethics of writing CPC and c) the key issues that determine authorship of a scientific manuscript.

METHODOLOGY

A survey was established using a simple, easy-to-use online format with 11 clearly defined questions (see **Appendix**). A 12th question allowed respondents to freely express any opinion they wished. At least 1000 leading plant scientists were contacted by e-mail, and invited to participate voluntarily in the survey. All questions had to be answered and the survey could not be returned unless all questions were completed (default setting) to ensure that no imbalance result. We estimated that each survey could take between 15 and 20 min to complete, as some respondents provided detailed opinions in the 12th question. After a 2-month waiting period, survey results established from 68 respondents from 35 countries (**Table 1**) were assessed. Names, institutional associations, e-mails and countries were determined. Age and gender were felt to be unnecessary and irrelevant to our discussion, and thus were not monitored. All respondents were confirmed to be plant scientists with at least a PhD and with publishing experience in international journals. Final results were shown in the form of simple, easy to understand pie-charts. All respondents were informed that the survey results and their opinions would be published and 100% of respondents provided full consent to publish this data (pre-requisite for completing the survey).

RESULTS

Simple pie-charts represent the data of questions 1-9 (**Fig. 1**, Q1-9). 74% of respondents had some form of international research collaboration, 31% of which claimed that all authors gained automatic authorship in published papers.

Table 1 Information regarding survey respondents (n = 68).

Country	Absolute No.	Relative %	Pertinent comments (Question 12, open question)*
India	8	11.27	Planning, execution and writing should be given equal weighting. Preparing initial or complete first draft of the MS is indeed very important.
Japan	7	9.86	
Italy	6	8.45	In my opinion ghostwriters are not valid authors in the sense they simply should not exist.
USA	5	7.04	1) Co-authorship is a dynamic process which comes up as research is progressed. Every one participates in all phases of research in my case.
Nigeria	5	7.04	1) Authors of a manuscript should be scientists who are actually involved in the research proposal, conception and execution of the project. Grants and funding are sought for and must be acknowledged. 2) There is no official document of my institution prohibiting such practice (i.e. authorship for providing laboratory and research facilities). However, if the authorities come to know of it, they will definitely frown at it. 3) I would consider a statistician to be a valid author in situations where he was consulted before the experiment and had made useful and considerable input. His place as valid author would be made even more solid should he partake in data analysis/interpretation.
Brazil	3	4.23	
South Korea	3	4.23	
Canada	2	2.82	
Egypt	2	2.82	
Hungary	2	2.82	
Slovak Republic	2	2.82	Our boss decides who co-author of manuscript could be. The rules are altered as they are needed, e.g. two students doing all laboratory work and statistics are not entitled to, but the three colleagues from Germany who provides one small table yes. Comments on unethical issues do not lead to anything good.
United Kingdom	2	2.82	
Tunisia	2	2.82	We have to consider the list of author in accordance with their collaboration.
Argentina	1	1.41	
Belgium	1	1.41	We have a native English speaker at the institute paid to help with the language, but she is never a co-author.
Burkina Faso	1	1.41	
Burundi	1	1.41	
Colombia	1	1.41	
Croatia	1	1.41	
Democratic Republic of Congo (DRC)	1	1.41	I think it is great to exchange knowledge and benefits with other scientist from all over the world but they are some limitations in many institutions for example in DRC we have to submit a proposal before we begin any research which should includes the names of authors and the plan of work and it is very difficult to add a new co-author to the paper after finishing the work.
Iran	1	1.41	
Lebanon	1	1.41	
Malaysia	1	1.41	
Mauritius	1	1.41	
Norway	1	1.41	
Portugal	1	1.41	
Russia	1	1.41	
Serbia	1	1.41	Addition of a single co-author from US (UK, Germany, Japan or Scandinavia) will significantly increase chances for a paper to be published. We in Serbia are allowed to have 7 co-authors on a paper and scientist often add co-authors for weird reasons. Sometimes it is statistics, usually some kind of personal favors and seldom improvement of language. I belong to a large project with nearly 30 people and we are advised to have not less than 5 authors on a paper. We all benefit from such policies in a long run.
Spain	1	1.41	
Sri Lanka	1	1.41	
The Netherlands	1	1.41	
Uzbekistan	1	1.41	
Venezuela	1	1.41	
Vietnam	1	1.41	

* Comments have been used, wherever possible, exactly as written by respondents. Only grammar has been corrected to provide clarity to the reader.

24-28% of respondents indicated that authorship had been provided to an English native speaker in published papers, although 56-63% of respondents found this type of co-authorship to be ethical and 65% of their institutes and funding agencies also considered this to be an ethical and valid form of authorship. 62% of respondents found a statistician to be a valid form of authorship while a surprising 16% found a ghost-writer to be a valid form of authorship. Experimental design and experimental execution were (predictably) considered to be the two most important factors that would merit authorship (91 and 97%, respectively) although 38% of respondents stated that language revision alone merited authorship. There was large variation in the combination of factors that were essential to determine authorship, although criteria 1-3 (**Appendix**) were the primary ones (**Fig. 1, Q10**). Clearly criteria 4-6 did not qualify as criteria for authorship in more than half of respondents (**Fig. 1, Q10A**). The former part of this rationale was confirmed by the necessary combinations of criteria needed to determine authorship, i.e., **Q10B**. As expected (fairly conventional rationale), criteria 1+2 and 1+2+3 were the two most popular combinations of criteria determining authorship. Interestingly, the combination 1+4 was ranked third, contra-

dicting slightly the findings of Q10, and also contradicting the requirements for authorship as defined by the ICMJE and Elsevier's PERK (see Teixeira da Silva 2011c for deeper discussion). Of considerable interest, except for criterion 2, most respondents felt that only one criterion (1, 3, 4, 5, or 6) was insufficient on its own to merit authorship, i.e., authorship could only come about as a result of multiple functions and/or responsibilities, mainly two, but occasionally 3 or 4. Most respondents felt that criteria 4-6 should only be mentioned in the acknowledgements section. One third, felt that criterion 3 (i.e., data and statistical analysis) should be mentioned in the acknowledgements, while almost none (predictably) felt that criteria 1 and 2 should be mentioned in the acknowledgements, i.e., that they should be authors. Several respondents provided personal and pertinent critiques (last column in **Table 1** in response to Question 12).

DISCUSSION

Should an English language assistant (ELA) be a valid co-author? This is one of the key questions we aimed to clarify in this survey. Naturally, some facts were self evident and

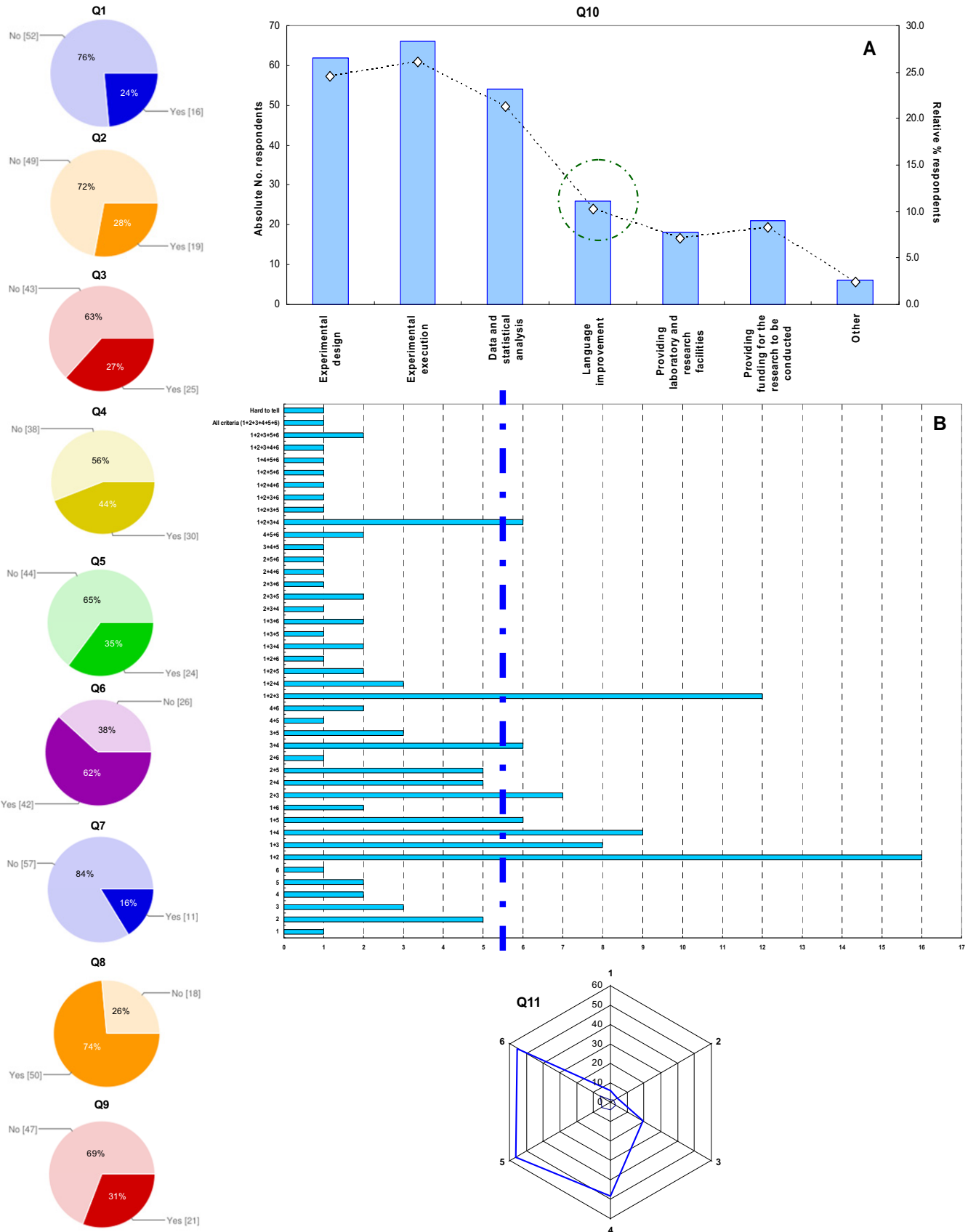


Fig. 1 Quantitative response by survey respondents (n = 68) to 11 questions, represented graphically in three parts: Q1-9, Q10 and Q11. Q = question (e.g., Q1 = Question 1 in the Appendix). For Q1-Q9: Values are represented as absolute number of respondents in square brackets e.g. [38]. The absolute percentage of respondents responding to each question is also indicated. For Q10A, sky blue bar = absolute number of respondents; dotted line = relative percentage of respondents; green open circle = grey zone regarding current international co-authorship ethics. For Q10B, X-axis = absolute number of respondents while Y-axis = choice or combination of choices; blue dotted line = threshold limit between what can be considered to be undoubtable authorship and debatable authorship. Also, for Q10B, any choice not appearing on the Y-axis (e.g., 3+4+6) implies that no respondents found this combination of criteria to be valid (or important) for determining authorship. How to interpret the graph in Q10B? For example, 6 respondents indicated that to be an author, choices 3 AND 4 (i.e., 3+4) were required. This implies that, for 6 respondents, the criterion for being a valid author in a scientific paper was that they make statistical analysis of the data AND provide language improvement. For Q11, numbers 1 through 6 on the hexagonal tips represent 6 choices indicated in the appendix. Numbers 0 through 60 represent the absolute number of respondents who believe that that criterion is cause for being mentioned in the Acknowledgements, i.e., no right to authorship.

served simply to verify what we expected to hear or already knew, either from the literature, or from common sense. For example, that experimental design and experimental execution were the two most important factors meriting authorship (91 and 97%, respectively; relative percentages; **Fig. 1**, Q10). However, this survey revealed some deep rifts in the interpretation of what should be a valid author and what constitutes an ethical author. The number of non-native English speakers who publish in international, peer-reviewed journals is difficult to quantify although it is highly likely that this number may in fact exceed the number of so-called native English-speaking scientists. These non-native English-speaking scientists are at a strong disadvantage, and to bridge this gap, they seek assistance, free or paid, usually from language revision services from ELAs. Occasionally, authorship is attributed to the ELA in exchange for language assistance, which may pose ethical hurdles in the scientific community. ELAs, although offering some advice on sentence structure and grammar, usually fail to significantly improve the manuscript quality, especially the scientific content and accuracy, and – ironically – even English expressions and grammar. However, a writing collaboration partner who is both a native English speaker (and/or an ELA) can provide significant improvements to the linguistic and scientific aspects of a scientific paper. We are of the opinion that an ELA should not be attributed co-authorship unless: 1) they make significant improvements to the linguistic aspects; and 2) they are competent professionals in that field of study. An ELA who fulfills both criteria – and not only one – could be entitled to co-authorship if at the request of all co-authors, provided that all other publishing ethics are respected. ELAs are usually friends or form part of a formal education body such as a school, university, institute or even a commercial set-up such as a language editing service, to assist in the language improvement of a manuscript. While the knowledge of an ELA maybe good for picking up grammatical errors or perhaps offering broad advice regarding basic/pure English (including sentence structure, punctuation or other more subtle aspects of the language issues), they are in no way qualified to comment on or even assist with the scientific aspects. Thus, an ELA who assists with a school project, a verbal presentation or even touching up on a final version of a scientific manuscript, would most likely fulfill this function competently, and in the latter case, should be acknowledged in the Acknowledgements section. This was confirmed by the 84% of respondents (**Fig. 1**, Q11). However, unless they are at least BSc, MSc or PhD graduates in a scientific discipline, they are, overall, not competent to deal with the intricacies that are fundamental to scientific English, which go far beyond regular or standard English. So important is English language revision that 56-63% of respondents in this survey considered and ELA to be a valid and ethical form of authorship (**Fig. 1**, Q3, Q4), with 24-28% of respondents actually practicing this activity in indicated internationally published papers (**Fig. 1**, Q1, Q2), which might be considered to be an ethics violation by most main-stream publishers and ethical bodies such as ICMJE, COPE, WAME, etc. (discussed in more detail in Teixeira da Silva 2011c). One of the most shocking revelations was that an enormous 16% of respondents found ghost-authors (people who provide significant assistance but are not listed as authors) to be a valid and ethical choice in international publishing (**Fig. 1**, Q7).

Several issues are in dispute regarding co-authorship: a) Who has the right to be a co-author? b) What should the position be of each co-author? c) Should each co-author have a different weighting, how is this weighting determined and should a quantitative weighting system be used to discriminate between who should/could be a co-author and who should not? d) When paid language services are provided, should that ELA or ELA + scientist be included as a co-author? e) If a paid language editing service is used to improve the English and/or scientific content, and should that person or entity not be awarded co-authorship, but they are not acknowledged openly, is this considered to be un-

ethical or ghost writing?

This survey goes some way in elucidating the conflicts that at least plant scientists have regarding question a) and by outlining clear guidelines (Teixeira da Silva 2011c), which until mid-2011 had not yet been clearly defined, regarding writing CPC and valid, ethical co-authorship. It is the objective of this survey and allied papers currently being published to draw attention to this highly contentious issue which remains a grey area of debate in the world of biomedical science publishing and which is often skirted or ignored by the leading players of the international publishing market.

CONCLUDING REMARKS

International writing collaboration or writing CPC is an ever-growing essential tool for the success of survival of research groups involved in the world of international science publishing. The way in which a writing CPC is established, developed and executed must follow strict ethical guidelines that must be established by and between all CPC partners and not by the journal or the publisher, although they should also encompass and take into consideration the ethical guidelines that are set out by these external parties e.g. the publisher. Writing CPC is a win-win case for science and technology, for the scientific community and for the CPC partners. When a writing CPC is conducted ethically, and when it is open and transparent, it should be embraced by publishers as a new and effective way of forming partnerships in science with valid co-authorship (Teixeira da Silva 2011c). Writing CPC is a useful way to reveal more scientific results, to inspire new research collaborations, and to inhibit the marginalization of scientists from developing countries.

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REFERENCES

- Teixeira da Silva JA (2011a) Who owns science, owns society. *Maejo International Journal of Science and Technology* 5 (1), S1-S10
- Teixeira da Silva JA (2011b) Weaknesses in publishing: Identify, correct and strengthen. *Maejo International Journal of Science and Technology* 5 (1), S11-S20
- Teixeira da Silva JA (2011c) The ethics of collaborative authorship. *EMBO Reports* 12, 889-893
- The Royal Society (2011) *Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century*, RS Policy document 03/11, DES2096, London, UK, 114 pp

Appendix

All questions were a simple YES/NO choice, although respondents had the opportunity of adding commentary freely in Question 12. In addition, multiple choice-type questions are indicated by grey bars.

Question 1

(Case 1) If English is not your native language, have you ever requested a native English speaker who is also a peer or specialist to join your team in exchange for co-authorship (assuming that edits made were considerable leading to a significant improvement of the manuscript content, style and language)?

Question 2

(Case 2) If English is not your native language, and someone identifies that they would be able to assist you in making improvements to scientific content and language, have you ever provided co-authorship to that person (assuming that edits made were considerable leading to a significant improvement of the manuscript content, style and language)?

Question 3

Do you consider Case 1 to be unethical?

Question 4

Do you consider Case 2 to be unethical?

Question 5

Does your Institute, funding agency or Government consider Case 1 or Case 2 to be unethical?

Question 6

Do you consider a statistician to be a valid author?

Question 7

Do you consider a ghostwriter to be a valid author?

Question 8

Do you have international research partners (e.g. through collaboration studies or funding projects)?

Question 9

If you have international research partners, do all members of both (all) co-operation partner laboratories AUTOMATICALLY receive co-authorship?

Question 10 (multiple choices allowed)

Please indicate which of the following (A) choices and (B) combination of choices give a scientist the right to be an author. ** A scientist conducts a significant or a fundamental portion of the research in the manuscript. *** Language, grammar, syntax, and scientific content are all checked and significantly improved.

- 1) Experimental design
- 2) Experimental execution**
- 3) Data and statistical analysis
- 4) Language improvement***
- 5) Providing laboratory and research facilities
- 6) Providing funding for the research to be conducted
- 7) Other

Which of these 6 choices above MUST be considered together to become an author?

Question 11 (multiple choices allowed)

Please indicate which of the following choices do you consider should be included in the acknowledgements section? ** A scientist conducts a significant or a fundamental portion of the research in the manuscript. *** Language, grammar, syntax, and scientific content are all checked and significantly improved.

- 1) Experimental design
- 2) Experimental execution**
- 3) Data and statistical analysis
- 4) Language improvement***
- 5) Providing laboratory and research facilities
- 6) Providing funding for the research to be conducted

Question 12

Please feel free to provide any other comments you feel pertinent to this survey