

1. Ten Simple Rules for Getting Help from Online Scientific Communities

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OK, I have included the things asked by the referees and improved the grammar.

There is no need to change this manuscript further.

Introduction

The complexity of research requires scientists to work at border-fields and to face problems for which their formal education has not prepared them. Nowadays, to conduct autonomous research, scientists are required to be competent in a wide range of disciplines. For example, biologists with no or little background in programming are now often using complex scripts to analyze the results from their experiments; similarly, programmers wishing to enter the world of bioinformatics need to know about biochemistry, genetics, and other fields.

In this context, communication tools such as mailing lists, web forums and online communities

acquire increasing importance. These tools permit scientists to quickly contact people skilled in a specialized field. A question posed properly to the right on-line scientific community can help in solving difficult problems, and is often faster than screening literature or writing to publication authors. The growth of active online scientific communities, such as those listed in Supplementary Table 1, demonstrates how these tools are becoming an important support tool for an increasing number of researchers.

Nevertheless, making a proper use of these resources is not easy. Adhering to the social norms of World Wide Web communication - loosely termed 'netiquette' - is both important and non-trivial. In this article, we take inspiration from our experience on Internet-shared scientific knowledge, and from similar documents such as 'Asking the Questions the Smart Way'[1], and 'Getting Answers'[2], to provide guidelines and suggestions on how to use online communities to solve scientific related problems.

Rule 1. Do not be Afraid to Ask a Question

Some people are afraid of asking a question in a public website, for fear of appearing ignorant or foolish. Other people worry about their ability to proficiently express the question or using the correct grammar.

Actually, asking a question in a public website is a good thing. First, the process of composing a message to explain a problem is itself a great exercise. Second, it is a great way to learn faster, and to enter in contact with people from different backgrounds. Third, and more important, your career will be difficult if you do not learn how to get the help from other people.

As Albert Einstein once said, "The important thing is not to stop questioning. Curiosity has its own reason for existing"[3]. Asking questions should always be a priority in science, and online communities are a good place to practice.

Rule 2. State the Question Clearly

The key to getting a good answer is to ask the question in a clear and concise way. If your question is too long, many people will just skip it without reading it. On the other side, if your question is too short, people may interpret it wrongly and give you an erroneous answer.

A way to keep your question short is to systematically break down the problem into smaller parts. This can help you to decide where to seek help, and how much to seek. If you feel your problem is composed of multiple questions, then post as many messages as needed. You should start a separate discussion thread for each of the problems you want to solve, avoiding merging messages about different topics together.

On the other hand, you should provide enough details so that people can answer you without

having to ask for additional explanations. Read the message you wrote carefully, and think which details you forgot to include. A reader should be able to answer just by reading your initial message, without having to look at the rest of the discussion, and at what other people already answered you.

Spend as much time as you need in preparing your initial message: this will save time later and will lead you to find the best solution more easily. Many people are surprised to see how sometimes, in thinking about how to pose the problem, the answer reveals itself!

Rule 3. New to a Mailing List? Learn the Established Customs Before Posting

A common error is to rush into a web forum and start asking something without understanding how its web interface works and which people use the resource. Instead, it is a good practice to spend a few days, after having created an account, to read the discussions published and to practice with the web interface. You will see which people use the forum or mailing list, which rules of netiquette are used, which kind of questions are asked, and how much time it takes to obtain an answer. For this reason, it is a good idea to always follow a few mailing lists or forums on topics of your interest, even when you do not urgently require anything from them.

Remember that some technical terms may be understood in a mailing list or community but not in others. For example, people who do not study genomics might not immediately know how to respond to questions about GWASs, SNPs, or STRs (genome-wide association studies, single nucleotide polymorphisms, and single tandem repeats, respectively).

Rule 4. Do Not Ask What Has Already Been Answered.

People do not like to repeat their explanations. Before posting a question, use your favourite search engine to see if an answer to your question has already been posted. Most discussion forums or mailing list also have a searchable archive, which can be consulted before posting a question.

If a similar question has been asked previously, read it carefully. You should post a new question only if the answers you have found are not satisfactory. In the case you decide to post a new question, cite the other messages and explain why they are not sufficient to solve your problem. This demonstrates that you have already researched the answer on your own.

Rule 5. Always Use a Good Title.

People like to quickly skim through titles, looking for questions within their expertise that they are able to answer. So, you will have to use a good title to catch the attention of the readers able to help you.

An approach to choose good titles is to think of an hypothetical web search query that you would use to find a solution to your problem. For example, where you might search for “format BLAST database,” an adequate title for a forum post could be “How do I format a BLAST database?” or “Formatting a BLAST database.”. Reading the titles used in the discussions opened by other users can also be a source of inspiration.

At the same time, it is important not to waste the time of the people who are not able to help you, and are not interested in your problem. Refrain from attempts to attract attention by using titles such as ‘Help me’ or ‘Urgent’: people usually do not appreciate these kinds of titles, because each forum member must then view the post in order to understand what you are asking. If you use incorrect titles, your message may be censored or closed by the moderators, and you may be forbidden to use the resource.

Some examples of good and bad titles are shown in Supplementary Table 2.

Rule 6. Do Your Homework Before Posting

People in an online community are willing to help, but are not there to work for you. You should always show that you have first tried to solve your problem by yourself. Explain clearly what you have done, and describe the approach that you took.

When asking for help to solve an assignment, always explain how you have tried to solve it. Most students from bachelor programs use web forums and mailing lists to copy-paste the assignments given by their teachers, and pretend other people to show them how to solve them. This behaviour is not well received and in the long term, it can bring you a bad reputation.

However, you can still ask for help on how to solve an exercise if you demonstrate that you have made some effort in solving it. Show what you have done so far, and why you think it is not correct. Ask other people to check your solution, not to give the solution to you.

When asking about a programming issue, do not expect other people to write a whole program for you: rather, post an example of the code that you have written and where you are stuck. Include an example of the input and the expected output of your program. If you receive error messages, also include the full output of the error. This will help the other users to inspect your logic, to test the code on their own computers, and to easily pinpoint the problem therein. Moreover, if you ask a question about a software package, make sure that the solution is not already answered in the user manual or the Frequently Asked Questions (FAQs). Also, declare that you have already checked these sources.

If you really need another person to write a program or a task from you, then explain that you are looking for a collaboration, and say how you will acknowledge a correct answer. If you explain everything well, your reputation online will also be improved.

Rule 7. Proofread your Post and Write in Correct English.

Using a correct grammar is important. Readers will be more likely to answer if the question is clear and correctly posed. Your grammar does not need be academic, but it must be intelligible to a broad audience. Avoid slang and abbreviations as much as possible, to show that you have at least some effort in writing a clear message. Writing in capital letters or in unconventional styles - such as that of text messages, excess abbreviations, Internet memes, etc. - is usually unwelcome, and in the long term can deteriorate your reputation online.

Your message should be as much concise as possible. You do not need to introduce yourself on every message; doing it only once will be enough. Avoid using too many adverbs and adjectives, as they make the text difficult to understand. Prefer using verbs in simple present and simple past, and avoid using conditionals. Also, do not be afraid of repeating technical terms more than once, as using too many synonyms can complicate the text.

This rule may be the most difficult to follow for non-native English speakers. A good approach is to read the messages written by other users of the forum or the mailing list and to take example from them. Search for a question similar to what you want to ask, and use it as a model. In any case, remember rule #1: you will never learn how to pose correct questions if you do not start trying.

Rule 8. Be Courteous to Other Forum Members.

Members of a discussion forum are usually unpaid volunteers who offer their time and expertise by volition and not by obligation. They are not obliged to answer any questions at all. Maintaining civil and polite conversations fosters an environment that encourages people to contribute.

You must remember that forums are as human as their users, and you may sometimes receive a perfect answer written in an unfriendly tone. This can happen for various reasons: perhaps the same question was asked previously, or maybe the author was in a bad mood when writing. For your career, it is crucial that you not permit the discussion degenerate into an argument. Even if you receive an impolite answer, stay calm and answer as gently as you can. Remember the golden rule: treat other forum members as you wish to be treated.

Also, do not ask your question in multiple places at the same time. 'Cross-posting,' as this practice is called, can make two distinct online communities to work through a solution for you when only one is needed; this is an abuse of forum members' time. If you have not received an answer and you believe that asking it in another place would get you one, link back to the original discussion. Similarly, if you receive an answer in a different forum, report the answer to the original forum. Then, the people who helped you will know what the correct solution is and that you are no longer looking for it.

Rule 9. Remember that the Archive of your Discussion can be Useful to Other People.

Messages in a mailing list or forum usually remain archived on the Internet. In certain situations, this can be a source of trouble: check the policy of your University or employer regarding posting on Internet; avoid spreading embargoed information; and prefer using your academic/corporate email address when registering, to keep your private life separated from your work.

Nevertheless, most of the times it is possible to make use of online communities without breaking your employer's rules. In these cases, the fact that the archive of the discussion remains publicly accessible is positive, as it becomes a useful resource for people searching for solutions to similar problems. Several knowledge archives are actively saving bioinformatics-related questions from open source projects. For example, questions about BioPerl [4] are kept in the GMANE (<http://news.gmane.org/gmane.comp.lang.perl.bio.general>) and Nabble archives (<http://old.nabble.com/BioPerl-f13596.html>).

Since the archive of the discussions remain available on Internet, it is good practice to conclude every discussion by indicating the correct solution to the problem exposed or by summarising the suggestions received. If some of the answers that you received has been proven to be wrong, remember to report it: this will help other people to avoid trying an erroneous solution. Even when you did not receive any useful answer, sacrifice a bit of your time to thank the people who tried to help you and to explain that you were not able to find a solution.

Rule 10. Give Back to the Community

Have you found your answer? Great! As time progresses and you get more experienced in the respective field in which you asked your question, you might want to start contributing the knowledge that you have gained by helping people that are now in your previous position. Most online communities are very welcoming to new members, as they alleviate the work of more experienced ones. Also, as a new contributor, you might be able to see problems from a beginner's point of view. You don't have to contribute to the community by answering questions, as some communities have a "wiki-style" interface where you can contribute by editing, tagging or flagging questions. In any case, following at least a few scientific-related mailing lists and contributing actively to them is a great way to come in contact with researchers working in your field, and over the time can lead you to new collaborations and new opportunities for your career.

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2. **References:**

This work is a resume and adaptation for the life sciences of the following works:

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3. **Supplementary Tables**

ST1: list of bioinformatics and biology-related mailing lists and communities.

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