

Resources on the web: 'Ask a scientist' websites

Halina Stanley from the American School in Grenoble, France, reviews some of her favourite 'ask a scientist' websites in English and French. Thanks to the help of many readers throughout Europe, we can also draw your attention to sites in Croat, Danish, Finnish, Hungarian, Norwegian, Portuguese, Russian and Serbian.

There is a surprisingly large number of 'ask a scientist' websites that rely on experts to answer scientific questions submitted by students or teachers. These are a very useful resource for project work when you don't want to reinvent the wheel, but like much technology, they need to be used correctly. Teachers are generally unimpressed by (and wise to) assignments cut-and-pasted from the worldwide web (or worse, pages printed off in their entirety) and getting expert replies to some homework questions could easily be construed as cheating. Some websites even refuse to answer questions on subjects commonly covered in general reference books or textbooks.

Asking a scientist should be a last, rather than a first, resort. This is for your own benefit as much as for reasons of principle. A website may receive a few hundred or more questions a day, so not all are answered, and, as with the web in general, the standard of the answers can be very variable. Although most of the expert replies I have seen are excellent, some answers can be oversimplified to the point of being misleading, while oth-

ers are so technically difficult that you need to be an undergraduate in the subject to understand them.

There is now a tremendous amount of information readily available on the web and so when most people fail to find the information they need it is because they don't know how to use a search engine properly. The choice of keywords is crucial. Google's website on basic use of search engines^{w1} is definitely worth consulting before you fire off your question.

If your best search efforts and Wikipedia fail you, choose your 'ask a scientist' website carefully, checking that it answers questions in your subject area of interest. The best websites give a list of instructions for those wishing to submit questions – read these carefully. Think hard about the question you want to ask. If your question is long, rambling or unclear, you are unlikely to get the answer you want. Specific questions like 'How are cirrus clouds formed?' are much more likely to be answered than 'How do you prepare a sample for electron microscopy?' To maximise your chances of receiving an answer at the level you need, include information about

what you already know and where you are unclear, and state who you are (teacher, or for students, age or grade level). Finally, consider approaching someone at your local university or technical college rather than an anonymous, remote website. Many research scientists are only too happy to help science teachers or students, so you may find a very useful contact closer to home. University websites detail research areas and often list email addresses.

My favourite 'ask a scientist' websites are those run by government agencies or universities. There are also sites associated with scientific publications and companies. Here are a few examples.

English websites

The website run by Argonne National Laboratory answers questions on subjects ranging from astronomy to zoology. Its expert scientists are volunteers from around the world who are registered with the site. It is aimed mainly at high-school children (ages 16-18) and their teachers. See: www.newton.dep.anl.gov/archive.htm

NASA runs a number of websites that answer astronomy and space-related questions:

<http://science.msfc.nasa.gov/faq/ask-a-scientist.htm>

NASA's Goddard Space Flight Center answers questions relating to astrophysics:

http://imagine.gsfc.nasa.gov/docs/ask_astro/ask_an_astronomer.html

The European Space Agency runs a similar site:

www.esa.int/esaCP/SEMGMZUZJND_index_0.html

Scientific American has an 'ask a scientist' service:

www.sciam.com/page.cfm?section=expertform. You can find answers to how GPS devices work or why it feels good to scratch an itch here: www.sciam.com/askexpert_directory.cfm. As you would expect from a professional popular journal, their answers are both expert and well written.

For biology questions, you can try the Howard Hughes Medical Institute: www.hhmi.org/askascientist/

Arizona State University's 'Ask a Biology' site is aimed specifically at biology teachers of students aged 3-18: <http://askbiologist.asu.edu/>

The Cornell Center for Materials Research also answers everyday scientific questions. The answers are provided by many different experts (ranging from a Nobel prize winner to young research associates) so their quality varies. See: www.ccmr.cornell.edu/education/ask/about.html

Cornell University also hosts the 'Ask an Astronomer' website, where questions are answered by graduate students in astronomy. The website particularly encourages teachers and students to send in questions. See: <http://curious.astro.cornell.edu>

The Canadian [science.ca](http://www.science.ca) site answers questions on virtually any scientific subject and answers are helpfully organised in different categories. There are some very interesting profiles of scientists too. See: www.science.ca

The Ask an Expert website forwards questions to experts in a wide range of subjects – and also has links to many other websites where answers may already be posted. See: www.askanexpert.com

CERN, the world's largest particle physics laboratory, invites questions about particle physics from the general public:

<http://public.web.cern.ch/Public/Content/Chapters/AskAnExpert/AskAnExpert-en.html>

French websites

La main à la pâte is a website for primary-school teachers: www.inrp.fr/lamap/?Page_Id=31

Another site that is good for younger children is [archi7.net](http://www.archi7.net), run by a science journalist with a PhD in physics. The explanations are clear, but you may be lucky to get an answer as there appears to be only one person working on the site. See: <http://www.archi7.ouvaton.org/phys/>

Excellent sites for secondary-school project work are run by the prestigious Ecole Normale Supérieure in Lyon, in collaboration with a great many registered professional research scientists.

- For life sciences, see Planet-Terre: [www.ens-lyon.fr/Planet Terre/Site/Commun/Utilitaires/POSERQUESTION.html](http://www.ens-lyon.fr/Planet_Terre/Site/Commun/Utilitaires/POSERQUESTION.html).
- For physics, see CultureSciences Physique: <http://culturesciencesphysique.ens-lyon.fr/> and <http://culturesciencesphysique.ens-lyon.fr/contactez-nous>

The Espace Jeunes of the CNRS (French national research organisation) also aims to help high-school students with their projects: www2.cnrs.fr/jeunes/222.htm

The French physical society has a team of professional scientists who answer physics questions at any level: www.sfpnet.fr/front_office/index.php?rubrique=point_science

Meteo France does the same: www.meteo.fr/meteonet/decouvr/education/doctpe.htm

For chemistry questions, there is a chemistry resource centre designed specifically for teachers, which has answers to a great many frequently asked questions. See: <http://culturesciences.chimie.ens.fr/index.html>

The Université Pierre et Marie Curie has a website aimed mainly at helping teachers of life sciences. Questions are answered by a team of professors. See: www.snv.jussieu.fr/vie/faq/1faq.htm

Croatian websites

All 'e-school' projects by the Croatian Natural Science Association offer a range of 'ask a scientist' websites aimed principally at school students. Questions are answered by university professors or scientists from science institutes.

- Biology: www.biol.pmf.hr/e-skola/
- Astronomy: <http://hpd.botanic.hr/ast/eastro.htm>
- Physics: <http://eskola.hfd.hr/>
- Chemistry: <http://eskola.chem.pmf.hr/>

Danish websites

Dansk Naturvidenskabsformidling enables teachers, school students and others to direct their questions to a panel of science experts. Users can search through all previous questions and answers: www.formidling.dk

Spoergolivia (Ask Olivia) is a virtual girl who answers questions from children on all topics, including science. The answers are provided by a panel of experts, as well as librarians from children's libraries throughout Denmark: www.spoergolivia.dk

Finnish websites

The Bioteknologia Info website answers questions about biotechnology: www.bioteknologia.info

Tiede, a popular science magazine in Finland, answers questions from the public: www.tiede.fi/kysyasiantuntijalta/

Hungarian websites

The Hungarian science journal *Természet Világa* (*World of Nature*) enables university or high-school students to write in with questions which are answered by high-school teachers or university scientists: www.chemonet.hu/hun/teazo/miert/

For those interested in astronomy, the following website offers the public the chance to have their questions answered by a scientist or amateur astronomer:
http://hirek.csillagaszat.hu/olvasoink_kerdeztek.html

Norwegian websites

A number of 'ask an expert' websites in Norway are aimed at the general public, including school students. Many of the experts work for Norwegian universities.

- Ask a biologist: www.bio.no/bio/enbiolog/
- Ask an energy adviser: www.miljolare.no/tema/energi/sporsmal/
- Ask a meteorologist: www.miljolare.no/tema/luftkvalitet/kampanjer/regnsjekken/sporsmal/
- Ask an ornithologist: www.miljolare.no/fuglevennen/sporsmal/
- Ask a meteorologist and oceanographer: <http://web.gfi.uib.no/faq/>

Portuguese websites

These three sites are well suited for the general public, although the third example is dedicated more to children and to experiments that they can easily do at home, or to in-house phenomena like what soap is made of.

- Via the *Ciência Hoje* website, members of the public can have their questions about science and medicine answered by university professors and other research scientists: www.cienciahoje.pt
- Researchers at the Lisbon Astronomical Observatory (Observatório Astronómico de Lisboa) answer astronomical questions from the public: www.oal.ul.pt
- Particularly suitable for children is the *Ciência em Casa* (Science At Home) website, which answers questions about simple experiments to do at home, domestic phenomena, the constituents of soap and other everyday questions in its Eureka section: <http://cienciaemcasa.cienciaviva.pt/>

Russian websites

The Russian version of *Scientific American* includes a section where the general public can have their questions answered by experts, mostly university scientists. Only the most interesting questions are answered and published: www.sciam.ru

Serbian websites

Via the Serbian journal *Mladi fizicar* (*Young Physicist*), scientists answer questions from the public:
<http://mf.dfs.org.yu/arhiva/modules.php?name=Feedback>

Web references

w1 – The Essentials of Google Search:
www.google.com/help/basics.html

