

## **Websites and searching for collaborators.**

The way that scientific research is conceived and conducted is evolving rapidly. We have left the era of 'linear' research in which one investigator pursued a theme over several decades and we are developing a new culture in which research advances by the creation of interdisciplinary research to enhance our understanding of complex problems. Websites are important tools of communication and will play an increasingly major role in the creation of interdisciplinary research networks. Each year we scan several thousand websites worldwide in our search for expert reviewers for the HFSP grant and fellowship programs. We also scan bibliographic databases to determine the current interests of scientists, an approach which may also be useful for finding collaborators to bring new skills to a research program. The following remarks are a summary of our experience.

### **Websites:**

#### **1. Finding you.**

Try this simple test.

Type your name and city or institute into a popular search engine (Joe Bloggs, Oxford or A.N.Other, Karolinska). If you have an effective website structure, your lab homepage will turn up on the first screen and you can go directly to section 2 - Your Homepage. Having an effective website is important as often a name and institute/city is the only information available for finding a new colleague - it's the kind of information that comes up in late night discussions at meetings etc. when somebody suggests that there is someone who has a mutant, theory, machine, technique that might be interesting for your research.

If you do not have an effective institutional website structure, some of your recent papers will turn up on publishers' websites or as PubMed entries. This is better than total anonymity, but it may take a long time to find you from such an entry, as, at best, one can find the name of your institution from the address line (as only one address is given even if several teams have collaborated – for this and other observations on PubMed please see section 3 below). Searching with that information should lead to your institutional website. However, website structures and functions vary between countries and institutions. There are three basic types.

- open, scientist friendly with a high level of interconnectivity. These are the ones that come up immediately with a general search engine. Most of the major institutes in Australia, Canada, the UK and the USA are of this type.

- administrative and difficult to penetrate. These were conceived by the administration for their own purposes. When trying to follow the 'Research' link, one most likely ends up in the Technology Transfer Office without finding what the groups in the institution are doing as research. If the person searching for you doesn't know the exact name of your department you are lost to the world. On entering your family name in the front page search engine, he/she will get a list of assistants in the administration who have that

name. This is typical in northern Europe.

- inward looking. Again built by the administration, such sites are characterised by the lack of a basic English version and the need to have intimate knowledge of the country's research structure to reach the scientists. Scientists in such institutes have access to the web and their colleagues within their organisation, but it's largely one-way traffic as they cannot be easily accessed from the outside via the web. In France, one often needs to know the current Research Unit number and pass via the central server of a research organisation to reach a webpage which may open with general research themes rather than the names of PIs. Try the local search function and one is back to the administrative assistants (who may be more permanent members of the institute than the scientists). Many Japanese sites are similarly impenetrable, but major institutes are making an effort to adopt the first 'open' model.

If your institute is in the second or third category you are invisible for the purposes of networking. If in doubt have a collaborator who doesn't know your home institution's structural logic try to find your homepage. Thereafter, either persuade your colleagues to put pressure on the institution to improve its direct links to your work (people are not particularly interested that you gave a seminar locally three months ago - this is also a frequent result of using the institute's front page search engine) or create your own home page (if your institution allows this! check, there are some very heavy administrators around).

## **2. Your Homepage - tips.**

Efficient websites have a fairly uniform structure. Keep the opening page simple.

While showing your individuality do not be so innovative that nobody can find their way around your website without insider knowledge. If you do have really neat stuff to show, make sure the major buttons: cv, research interests, publications, group members, contact details come up and can be used while the receiving computer is struggling to load the movie of your latest or greatest discovery.

Try and resume your current interests in a short paragraph, including any specialized techniques you are developing or have mastered - people are interested in those aspects if they are looking for potential partners for a new research project. Provide a series of links (preferably with the names of the senior lab members involved) to the detailed descriptions of the major research programs in your lab. For publications, either use reverse order so that the latest publications are on the top of the list (mostly people want to know what you've been doing recently) or year buttons. The historical list may be impressive, but having to scroll down 6 screens to check that you are still active is not very user friendly. 'Selected publications' is also a good idea but requires regular updates. Linking to PubMed for such updates can be a good idea, but be aware of the problem of people with the same name and initial which may produce long confusing lists - try adding a qualifier (such as your current city or institution) when you set-up the link. Contact details should also appear clearly on the first screen - sometimes the e-mail is three screens down at the end of the extended description of your research history and

interests. Check that the details print! Some sites use a frame structure and when printing one only obtains the edges. Even more frustrating is the case when the e-mail and website hyperlinks within the page are visible on the screen but do not print. The person who wants to contact you may well want to think about the details of his/her message and will make notes on your homepage printout before writing to you.

Lastly, a photo that shows just how much you enjoy your science (or life in general) is an efficient communication tool. If you can't stand formal portraits, try a group shot of your co-workers showing how much fun it is to work with you! Keep the pixels down so that it loads quickly.

### **3. Searching PubMed for expertise and potential collaborators.**

In the same way that we look for reviewers, you may be interested to use PubMed to learn of worldwide efforts in your field or, more importantly in related areas that would enhance your own research. If you have only searched PubMed using scientists' names to date, try using a few keywords. The searches are surprisingly efficient and, for example, adding 'modeling', 'computation' or 'spectroscopy' to your own regular keywords (insect neurobiology, membrane proteins, yeast genomics, evolution etc. ) can provide links to physicists, mathematicians or chemists who have overlapping interests and experience.

When doing such searches, a rapid glance through the first two or three screens should enable you to detect authors who have already contributed to several studies in your chosen area. To find the driving force in multi-author papers one can select the abstract and then search in turn on the different authors' names to see their individual publication lists. This should enable you to distinguish the theoretical physicist from the neurobiologists and organic chemists contributing to the article that has attracted your attention. Trace him/her by looking at the latest paper with one or few authors in their individual list. These days some of the brightest scientists are very mobile and an address from 2 or 3 years ago may prove to be a dead end. Go back to Google with the name and city and with luck you'll find that person's website and will be able to see whether you have mutual interests that might form the basis of an innovative collaboration. This is particularly useful when seeking the expertise of scientists who do not always publish in journals that are indexed in PubMed (for example many plant scientists, but also physicists, chemists etc.).

As databases and search engines are constantly evolving you should consider extending such searches to Google Scholar, the Web of Science etc. Not only will you increase your chances of finding collaborators but you may also find work close to your own area that you have never seen in your own circle of publications and meetings!