



single copy locus in male cells. In one series of experiments, an AAV construct containing two *HPRT* exons—one of which contained a 4-bp insertion—was used to transduce three different normal human fibroblast cultures. At high titers, nearly 1% of the total fibroblast population became *HPRT*-deficient. Molecular analysis confirmed that in the majority of cases, the 4-bp insertion ended up within the endogenous *HPRT* gene, without other mutations or rearrangements.

The use of AAV as a homologous gene delivery vehicle is promising. AAV constructs are easy to manipulate, and the vector is able to transduce large numbers of cells without toxic or cumbersome treatments such as electroporation or microinjection, including *in vivo* transduction of a wide variety of normal cells in animals. Another advantage is that subtle mutations can be introduced without complicated selection strategies. Obviously, it will be critical to test a wide array of cell lines to see if the effect is widespread and to get a better handle on the reproducibility of the method. However, the demonstration that homologous targeting can now be done rather efficiently in normal human fibroblasts already sets the stage for many experiments. Using PCR, one should be able to efficiently screen a few hundred infected cell culture wells to find desired mutations. Not quite yeast numbers yet, but it's on the right track.

—Robert Sikorski and Richard Peters

## References

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## Demystifying Intranets

The Internet has become a fundamental tool for today's scientist. It is rapidly becoming the preferred method for receiving information from the world at large. Journal articles, meeting schedules, and university documents are the tip of the Internet information iceberg. The Net is great for disseminating information outside of the lab, but can it be harnessed for exchanging information within the lab? Indeed, a private Internet, called an "intranet," can be created within a lab so that lab members can access Web pages and databases that those outside of the lab cannot.

Let's begin with some background. First, remember that the Internet works because each computer has a unique address, called an IP address. To maintain a site on the Internet, you must register your IP address with a central

organization, InterNIC. This ensures that all IP numbers will be unique. (To create an intranet, you can modify and use reserved addresses that are not found on the Internet.) Next, note that the language of the Net is called TCP/IP. Third, be aware that most computers built today are easily networked using standard technology known as Ethernet. Fourth, take heart in the fact that most of the software you will need to create an intranet is available for free download now on the Internet (1–3).

The purpose here is not to give every detail for setting up an intranet, but just to describe the general steps and equipment involved; there are Web sites that provide all of the information you will need (4,5). To create an intranet, you should have a working knowledge of hypertext markup language (HTML) and familiarity with the basics of your computer environment. If you can install Windows 95 on a computer, you can build an intranet.

As an example, we can create a simple intranet with five PCs running Windows 95. The only hardware requirements for an intranet are that each computer have an Ethernet card installed and that there is a "hub" to connect each computer to each other. Ethernet cards are inexpensive (\$50 to \$100) and easily installed. (Macintosh users can smile, because Ethernet is a built-in feature.) A simple 8-port hub can cost under \$200.

A cable connects each card to the hub (6). All computers on the network will then communicate through the hub. Alternatively, you can connect all the cables into built-in Ethernet wall outlets. Most labs will have these outlets, but you should consult with your local systems administrator for guidance in their proper use.

The software requirements for a small intranet are one server and multiple browsers. Select one of the five machines to take on the role of "Web server"; the other four will be "Web clients." On the client machines, simply install the browser of your choice, such as Microsoft Internet Explorer or Netscape Navigator. On the server machine, you will need to install Web server software (1–3), which actually distributes the pages to the intranet. Although installing a server may sound complicated, setting up a scaled-down Web server, like Microsoft's free Personal Web Server, is very easy. The installation program for this server will be familiar to anyone who has installed typical PC software, and the server configures itself as you install it.

The configuration requirements for an intranet are based on the fact that each computer will need a unique IP address and a common protocol to talk to each other. The language is TCP/IP and it is a built-in feature of Windows 95. The

structure of an IP address is such that certain combinations of numbers (for example, 198.168.1.1) are reserved and will not be found on the Internet at large. Choose a reserved number for your base address, then expand on this number to create a unique address for each computer (198.168.1.2, 198.168.1.3, and so forth). Finally, adjust the configurations for the TCP/IP setting in the Windows control panel. We have included instructions for this at [www.medsitenavigator.com/tips](http://www.medsitenavigator.com/tips).

That is it. You now have your own private network for sharing lab data. By creating internal Web pages, you can provide everyone in your group with up-to-date protocols, lab announcements, vendor information, and so forth. It is not that hard to move to the next step and connect your server to a database. The database could be used as a storage area for images, text, or even movie clips. You can even link your intranet to the Internet so that your Web pages can be viewed externally as well. If this is your goal, you will need to learn about things called proxy servers, software that will protect you from security problems that could occur when your computer is exposed on the Internet. If you choose this route, there is a simple (although not free) server called Rideway ([www.itserv.com](http://www.itserv.com)) that can be set up in a few minutes.

—Robert Sikorski and Richard Peters

## Notes

1. Windows 95 personal Web server software is available from [www.microsoft.com/ie/pws/default.htm](http://www.microsoft.com/ie/pws/default.htm) or [www.omnicron.ab.ca/httpd/index.html](http://www.omnicron.ab.ca/httpd/index.html), along with instructions for installation.
2. Macintosh server software is available from [www.microsoft.com/ie/mac/pws/default.htm](http://www.microsoft.com/ie/mac/pws/default.htm), along with instructions for installation.
3. Server software for UNIX, Windows-NT, and several other operating systems is available from [www.apache.org](http://www.apache.org).
4. Information on setting up an intranet is available at <http://207.68.156.54/office/intranet/intranetwp/default.htm> and <http://207.68.156.54/intranet/>.
5. Information on intranets for office computing is available at <http://www1.zdnet.com/pccomp/oc/projects/0198proj.html>.
6. Information on building an intranet at home is available from <http://cnet.com/Content/Features/Howto/HomeLAN/index.html>.

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