nature biotechnology

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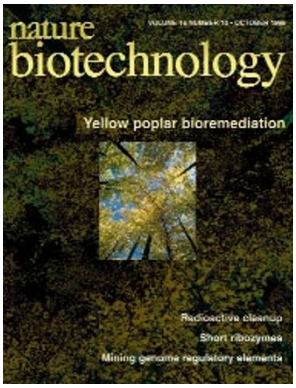
Not quite pharmacogenomics

To the editor:

Your editorial "Pharmacogenomics at work" (*Nature Biotechnology* **16:**885, October 1998) is off base. The use of a diagnostic test that detects overexpression of the HER2 antigen to identify breast cancer patients likely to benefit from Herceptin is not an example of pharmacogenomics.



Proponents of pharmacogenomics argue that the genotype can be used to segregate responding from non-responding patients.

A test for HER2 overexpression measures a phenotype that is not linked to genotype. Conceptually the HER2 test resembles tests for estrogen receptors. Different diagnostics unrelated to genotype are common and should not be confused with speculation regarding potential value of identifying patient populations by genotype.

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Industrial postdocs at risk

To the editor:

I would like to bring to your attention the issue of "industrial postdocs." This issue includes legal as well as ethical aspects and affects increasing numbers of PhD scientists in the life sciences.

While there is no exact definition of "postdoctoral fellow" or"postdoctoral scientist," the commonly accepted point of view is that this is a position for newly minted PhD graduates in which they can gain additional training and experience as independent researchers. This training has well-defined goals and measures of success and usually lasts for 3–4 years. Traditionally, postdoctoral training was considered a necessary component for those who chose an academic career; and in most cases scientists with successful postdoctoral training stayed in academia.

In recent years this has changed. More and more companies attract fresh PhDs for "postdoctoral training." Industrial postdocs are paid better then postdocs in academia and have better benefits, including retirement and stock option plans. Later these scientists find jobs more easily in industry because companies prefer to hire scientists with "industrial postdoctoral experience," believing that these people are more product oriented.

By hiring postdoctoral fellows, companies acquire relatively cheap, highly qualified and motivated labor, and the quality of their research benefits from the infusion of fresh blood from academia. But can companies really fulfill the obligation of providing young scientists with training and helping them achieve their individual goals?

What are the goals of postdoctoral training? Peers value scientists by their quality of research. In order to be evaluated, results have to be presented to the scientific community through papers, meetings, patents, and such.

The research project must add new information to the field. Even simple and well-known tasks can provide unexpected challenges, but it is unlikely that a postdoctoral scientist who has been purifying antibodies for three years using published protocols could expect a good publication record. The ultimate goal of postdoctoral fellows is to complete and present an independent project. This increases their market value and boosts their careers. This goal, however, can conflict with those of a company. Generally, companies (especially small and mid-size) are not interested in lengthy and costly research projects, they are looking for fast ways to get products to market. Companies have business plans and timing and funding are limited. Companies are not so much interested in publishing results as filing and obtaining patents, although this can take years. Business plans can change, projects can be abandoned all together and changes in management can result in restructuring and layoffs. Can a company in this situation keep the implied promise of providing young scientists with "postdoctoral training"?

One recent example is the closure of the Bristol-Myers Squibb Pharmaceutical Institute (Princeton, NJ) facility in Seattle, WA. No one was allowed to continue their research, as all results were the property of the company. Many postdoctoral fellows were laid off, all experimental materials were autoclaved and the results of the 2–3 years research were discarded. This resulted in significant and in some cases irreversible damage to the careers of those young scientists who relied on the opportunity to receive postdoctoral training. One could argue that this can also happen in an academic lab, when funding dries up and the professor has to lay off people. The crucial difference is this: in academia if your project is successful, you may be almost sure that you will get new grants to continue, and in no case will research results be thrown away. The Bristol-Myers Squibb facility closing it was a business decision that was not based on the quality of the research but on the importance of the projects to the company's business development.

It shows that even a large, well-funded company could not keep the implied promise of giving scientists the opportunity to complete postdoctoral training. That's why I think it is very important that young scientists understand the dangers of "industrial postdoctoral programs." It is important to mention that when individuals join a company, they may have to sign an agreement that states "Your employment is at will. This means that your terms and conditions of employment. . .may be changed with or without cause for any or no reason, and with or without notice" (this is a direct quote from a real offer letter). How can anyone depend on getting 3–4 years of postdoctoral training after signing such a document?

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