

FRANCIS COLLINS - "UNDERSTANDING COMMON DISEASE"



We're discovering what the factors are in the genome that place people at risk for different diseases. I believe over the next five to ten years, there will be an increasing ability for each of us to find out what our risks are. That will be most compelling in situations when there's something you can do about it if you turn out to be at high risk; so for instance a risk of cancer may very well allow you to get into a screening programme to make that diagnosis at the earliest moment and save your life.

We're discovering what the factors are in the genome that place people at risk for different diseases. I believe over the next five to ten years, there will be an increasing ability for each of us to find out what our risks are. That will be most compelling in situations when there's something you can do about it if you turn out to be at high risk; so for instance a risk of cancer may very well allow you to get into a screening programme to make that diagnosis at the earliest moment and save your life.

For other things like diabetes: we're getting pretty good at being able to figure out what some of those risks are and of course that's a preventable disease if appropriate diet and exercise prescriptions are followed. So we may be finding out those things about ourselves as well. And perhaps, a whole menu of possible conditions will be the sort of thing that can be predicted and I think a lot of people will be interested in that. It'll give us a chance to practise medicine in a preventive mode instead of focussing on people who have already gotten sick. And we all think that's a good thing: let's focus on wellness.

The way in which we've done that in the past has largely been one-size-fits-all. I don't think you'd go to the shoe store and go pick up just any old shoe without checking the size and take it to the counter, yet with your physician you're kind of getting a one-size-fits-all kind of medicine because that's what we've been able to do. In the next five to ten years, that's all going to change.

It won't just be in this area of predicting future illness. If you do fall ill, you're likely to have your DNA checked in some instances, before you get the medicine that's going to help you, so that it's the right drug for you at the right dose. Because right now we know there's a lot of variability in responses. A lot of that's going to be predictable and we should be able to do better with all we're learning about the genome.

In the longer term, maybe ten years from now for some diseases and perhaps a little longer for others, what we're learning about the genome is going to give us a whole new set of therapeutic interventions that are going to be much more targeted to the problem at the molecular level, instead of the empirical approach that we largely are stuck with right now. Because every time we learn about a gene that is involved as a risk for diabetes or breast cancer or heart disease it gives us a clue about what pathway is involved there and how we can design a better drug.

So I think the ways in which diseases are going to be treated in ten or fifteen years - for Alzheimer's disease or Parkinson's or cancer - are going to be quite different - and better - different in a good way. But these predictions are hard to make. There's this first law of technology that says we always tend to overestimate the impact of a discovery in the short term, but we tend to underestimate it in the long term. So maybe everything I've said is much too conservative. Maybe not. We'll see.