



*Photograph by Robert Ladd*

## Groundbreaking discoveries in science

Audience member: Over your career I'm sure you've seen some ground breaking discoveries in science. What do you think are the major ground breaking discoveries that you've seen and what do you see coming ahead?

Dr. Smithies: Well you know the ground breaking ones just keep coming, don't they? I mean, I mentioned Watson Crick. But you can go back almost a generation, in fact at least a generation. When I was a student I remember our professor coming in one day and very excited say it's just been discovered that DNA is the genetic material. See, it wasn't known that DNA was the genetic material. So that was a groundbreaking thing that came out. And then the Watson Crick thing was very groundbreaking. I remember the first time it was possible to sequence DNA and that was enormously exciting. I went to this meeting and a young graduate student, Nancy Mayzell (sp?), gave the talk and she got up and she started on the blackboard and she wrote down 60 letters. And that was the sequence of DNA from the bacterium e-coli between the gene she was studying which was beta-galactosides, which is a protein which makes the protein enzyme, and the controlling sequence which was upstream - their so called lot operator. And this sequence she just wrote it down. We couldn't tell if she had written the real one down. She could have written 60 letters of any sort and we wouldn't have known. But she wrote that down. It was very exciting and I thought now I want to do that for a human gene -- two human genes. That got me started in doing work with DNA and sequencing. Of course I had no idea how difficult the problem was or I might not have done it. It was much more difficult and it didn't mean anything when you got it. You didn't understand what you got. You see, but that those were breaking things. And if I could tell you what the future is, I would be doing it.