



It's not just keen young post-docs who cross the Atlantic for the chance to work in an exciting new lab. After a lifetime's research in European institutions, senior immunologist Klaus Rajewsky, is moving Stateside to continue his career. Here, Rajewsky reflects on the field of immunology research in Europe and outlines his hopes for the transition to America.

## Klaus Rajewsky

As of next month, Klaus Rajewsky, professor of genetics at the Institute of Genetics in the University of Cologne, plans to spend the majority of his research time at the Center for Blood Research at Harvard Medical School, Boston. He will transfer his activities to America entirely at the end of the year, thus bringing to an end almost 40 years of work in the Cologne Institute.

His move has been triggered by the most inevitable of reasons—age. Rajewsky is approaching 65, the general age of retirement for a scientist in Europe. Because he has the backing of his institute and the offer to retain a limited amount of lab space, he could apply for further funding from the Deutsche Forschungsgemeinschaft and other funding bodies, but says “the philosophy in Europe is that when you are of retirement age you should act retired. Whereas in the US this attitude doesn't exist.”

He could have taken the option of full time work at the European Molecular Biology Laboratory (EMBL) division in Monterotondo, where he has worked part time for the past few years as coordinator of a mouse biology program and through which he has “fallen in love with Rome.” However, when “an attractive and generous offer” came from Harvard—where Rajewsky has many friends, some of whom have also moved from Europe—in the end he “couldn't say no.” Amongst those he will join at Harvard are fellow immunologists Harald von Boehmer, Diane Mathis, Hidde Ploegh and Fred Alt.

Together with his former student, Hua Gu, Rajewsky is best known for his work in developing conditional knockout mice and using them to explore the role of B cells within the immune system. His research is based on the Cre-Lox system which exploits the ability of a recombinase enzyme called Cre to delete genes flanked by pieces of bacteriophage DNA called loxP. The Cre-lox system can be used to produce knockout as well as knock-in mice and also “conditional mutant” mice in which a single gene can be deleted in specific cells of the body that express the gene for the Cre enzyme. Deleting genes within B cells has helped to understand how the immune system de-

velops and reacts to threats.

An M.D. by training, Rajewsky paralleled his work in basic immunology with a clinical interest in lymphomas and in particular Hodgkin's disease, and together with Ralf Küpper's lab and the pathologist Martin-Leo Hansmann, is responsible for much of our advanced understanding of the B cell basis of Hodgkin's. He remembers the early days of their partnership: “In Küppers I had a great young student who was willing to study what we call molecular histology by single cell analysis. He picked cells from germinal centers in the immune system where the B cells hypermutate and then analysed the genomic DNA of these single cells for somatic hypermutation by gene amplification. This was a very ambitious thing to do. Everyone doubted it was possible and said that the technique wouldn't work because of contamination since we were amplifying a single gene copy from the cell. But it worked wonderfully and is the basis of our understanding of the B cell origin of Hodgkin's disease.” Rajewsky's present work is centered on marrying his two speciality areas of immunology to develop a conditional mouse model of Hodgkin's disease.

Rajewsky is looking forward to research on a more manageable scale when he moves to Harvard. “During the last few years my lab had become too big. There was a clinical branch, the main group in the Genetics Institute and then the venture in Monterotondo. So I think it would now be nice to concentrate my efforts on a smaller group.” But he laughs, “On the other hand, applications are coming in from the young, intelligent, ambitious postdocs, and it's hard to say no to them.”

In addition to being surrounded by those who would rather scrutinize his research than his birth certificate, Rajewsky is looking forward to working in an environment that has a more positive attitude towards immunology. “At the moment in Europe many people think that immunol-

ogy as a basic science is on the decline whereas it's in the ascendancy in the US.” He says that the view of immunology being “old fashioned” comes from those behind the scenes who organize science

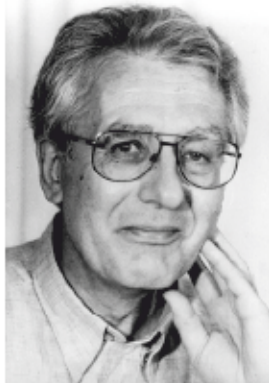
within large institutions rather than researchers themselves. But although he thinks the atmosphere is more psychological than real, last year's closure of the Basel Institute for Immunology in Switzerland is a concrete example of a decline in interest in immunology in Europe (*Nature*, 405; 605; 2000). Moreover, it is not clear how much emphasis the Institute of Genetics will place on

immunology when Rajewsky leaves, taking eight of his staff with him.

Not wanting to sound too negative about the state of immunology research in Europe, he stresses that, despite his transatlantic shift, he believes there are many positives about scientific research. But he adds that one of the main problems—and another issue that he sees as being different in the US and in Europe—is the attitude to funding research in general. “Everything that I have done over the past decade that is medically interesting has come from pure basic science.”

The genetic mouse models of disease and the lymphoma work all originated from basic immunology. Basic science often suffers at the hands of people coordinating science policy in Europe because they look, particularly the European Union, at the practical implications and at what subsequent employment opportunities and commercial value will come from any given project. This emphasis should change and I think it comes from the fact that the EU distributes money for science based on decisions made by administrators rather than scientists. In Europe, the scientists are not represented well enough inside the Commission where decisions are made.”

Karen Birmingham, London



Klaus Rajewsky