be used again in the nervous system, because you'll only pay attention when you're in the right neighborhood."

The explanation "neatly solves several problems," agrees Marc Tessier-Levigne of the University of California, San Francisco, who has studied the Robo-Slit system in mammals. Several researchers who investigate organisms closer to humans—zebrafish, birds, and mice—say the findings may help them discern similar patterns in those animals, as well as in humans. Mammals, at least, have several Slit proteins, plus a suite of Robo family members.

"The model is beautiful, but it's likely to be more complicated in vertebrates," says neurobiologist Chi-Bin Chien of the University of Utah in Salt Lake City, who studies Slits and Robos in zebrafish. Developmental neuroscientist John Kuwada of the University of Michigan, Ann Arbor, who also works with zebrafish, agrees. "Clearly, the Robo-Slit system does work in a somewhat analogous fashion in the vertebrate. Whether it's going to work in this fancy gradient system isn't certain," says Kuwada.

The Goodman team is now working on experiments to find out how the Robo-Slit system helps to control other areas of development. Robo2 is found in the heart, trachea, and muscles of developing flies, and the teams suspect the suite of proteins may provide similar direction there. "Biology uses everything it can: long-range attractants to get to neighborhoods, different local adhesion molecules" to guide more subtle decisions, Goodman says. "All of that together adds up to give precise guidance."

–GRETCHEN VOGEL

MOLECULAR CELL BIOLOGY

A Powerhouse Rises in Reborn Dresden

Two years in the making, a new Max Planck Institute is about to open its doors to scores of talented scientists—many from rival Heidelberg

BERLIN—Devastated by firebombing during World War II and blocked from receiving TV signals from the West during much of the Cold War, the eastern German city of Dresden once bore the unfortunate nickname of "Valley of the Clueless." Now, after a decade of revival, the Saxon capital is positioning itself as a post-communist Silicon Valley. And it is mounting a challenge to one of western Germany's scientific powerhouses in a fast-moving research area: molecular cell biology.

Next month, the Max Planck Society's Institute of Molecular Cell Biology and Genetics will open its glassy new headquarters in Dresden. About a third of the 150 cell biologists, biophysicists, and technicians already hired for the new center have been drawn from the European Molecular Biology Laboratory (EMBL) in Heidelberg, the hub of molecular and cell biology research in Europe for a quarter-century. EMBL's cell biology program has been making up the long-anticipated losses by recruiting from other top cell biology centers in Europe and striking off in new directions.

The Max Planck Society tends to form new institutes around dynamic individuals, and the Dresden institute's catalyst is Kai Simons. The society recruited him in 1998 from EMBL, where he had played a key role in expanding the cell biology program in the 2 decades after arriving from Finland in 1975.

Max Planck chose to locate the institute in Dresden as part of its wave of expansion into eastern Germany in the 1990s. Construction began early last year near Dresden's Technical University, which is building its own molecular bioengineering center. Work is also scheduled to start soon on a privately funded center for bioinformatics. "We're building up an interesting new environment in Dresden," says Simons.

His new institute will probe the way cells organize into tissues. Using time-tested organisms such as fruit flies, nematodes, zebrafish, and mice, researchers will delve into topics ranging from cell division and membrane traffic to cytoskeletal organization and signal transduction. The institute will offer a training program to attract leading Ph.D. students and postdocs, particularly those from countries to the east.

Simons "will pull in a lot of talented researchers from Eastern Europe," predicts EMBL alumnus Graham Warren, a cell biologist at Yale University School of Medicine. "The biggest problem," he adds, "may be in convincing top postdocs from the West to go to Dresden," which is relatively isolated from Western Europe's traditional centers of cell biology research.

Where east meets west. New cell biology institute expects to lure eastern talent.

CREDIT: MAX PLANCK INSTITUTE

A formidable team is already taking shape in Dresden. "Kai's strength is that he can identify not only the best established cell biologists, but also the talented young people who will rise quickly," says Ari Helenius, a cell biologist at Zurich's ETH Polytechnic who worked with Simons at EMBL. Top recruits include former EMBL compatriots Anthony Hyman and Marino Zerial, plus Heidelberg University's Wieland Huttner.

Simons has also demonstrated an appeal beyond Heidelberg, hiring, for example, biophysicist Joe Howard of the University of Washington, Seattle, who studies the mechanics of motor proteins. Simons hopes to have about 300 staffers and limited-tenure researchers in his center's 25 research groups within a couple of years.

EMBL, meanwhile, has not stood still in defending its position among a pantheon of top European cell biology research centers, which includes the Imperial Cancer Research Fund (ICRF) in London and the Marie Curie and Pasteur Institutes in Paris. Eric Karsenti, Simons's successor as coordinator of EMBL's cell biology and cell biophysics program, has hired away from the ICRF Ranier Pepperkok and Philippe Bastiaens, who were joined at EMBL earlier this month by another ICRF alumnus, Damian Brunner.

The restructured program's dozen research groups, Karsenti says, will focus on signal transduction, the cytoskeleton, and membrane trafficking. "We're getting applications from top-notch scientists," he notes.

Yale's Warren agrees that EMBL "needs to identify some young and dynamic researchers and give them the chance to do great research." Some of these young guns may end up heading east, perhaps crossing paths with colleagues in Dresden who get wanderlust and seek their fortunes at EMBL and other centers to the west.

Simons says he would welcome his center becoming part of a molecular cell biology "trade route": "This is exactly what Europe needs," he points out. "Movement."

–ROBERT KOENIG