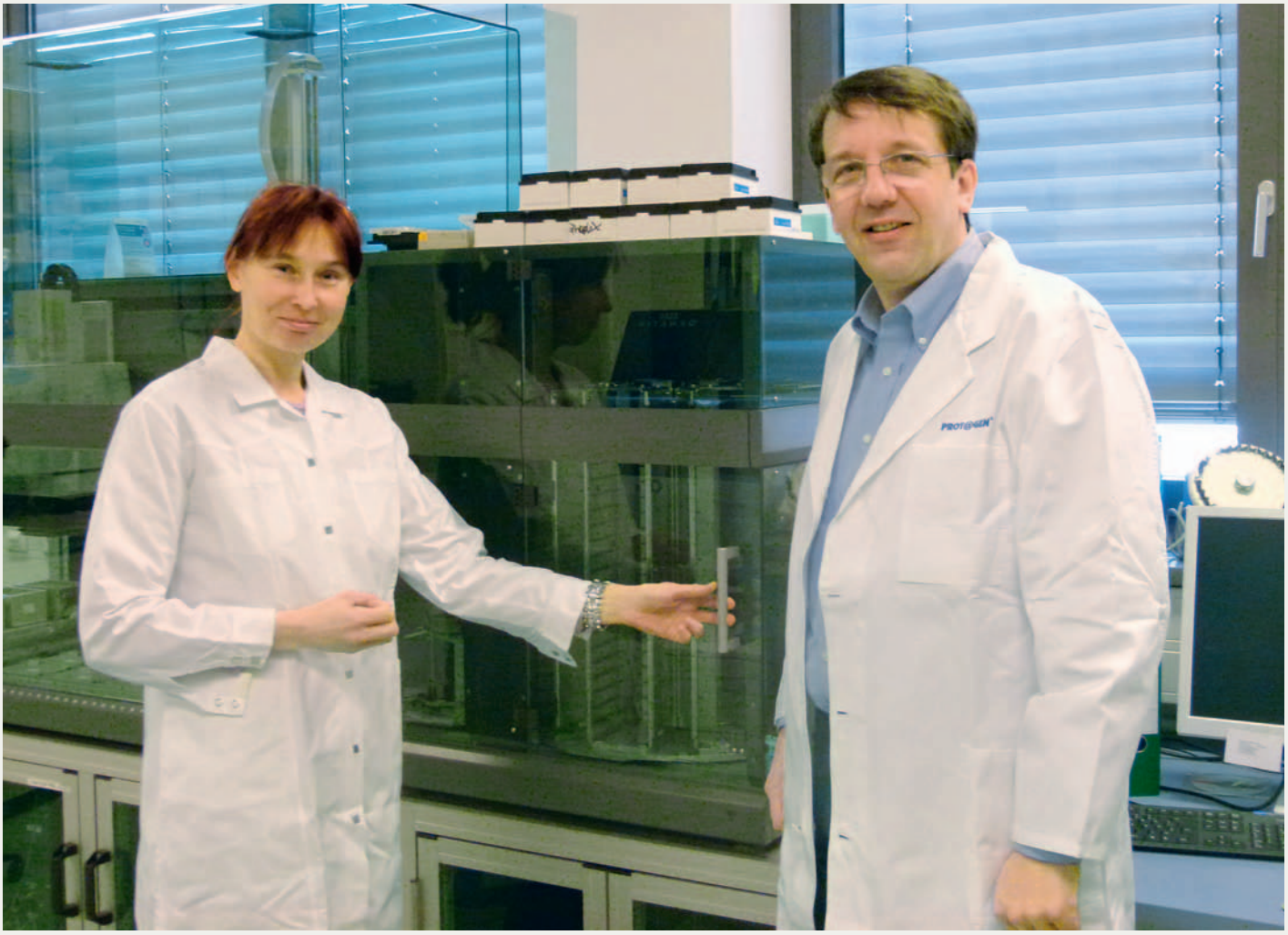
Finding the right candidate

Novartis is using an HS 4800™ Pro hybridization station to help profile and select antibodies for development into new biopharmaceuticals, relying on the system's throughput and reproducibility to efficiently prepare Protagen UNIchip® microarrays for analysis.

The complex nature of antibodies creates a number of challenges for the development of new biopharmaceuticals, as most antibodies will bind to multiple targets with varying affinity. Novartis' Integrated Biologics Profiling group in Basel, Switzerland, is responsible for assessing the technical developability of candidate antibodies as potential biopharmaceuticals, and uses Protagen UNIchip protein microarrays to identify off-target effects.

Steffen Hartmann, Head of the Protein Developability Group, explained the process: "Our colleagues in research begin with a therapeutic target which they wish to direct an antibody against, then identify potential candidate antibodies for further investigation. We generally start with around 50 antibodies which show binding affinity for the target of interest, and profile each of these according to various criteria to assess the potential to further develop the antibody for therapeutic use. An important aspect of this profiling is the identification of off-target effects, which are particularly important in drugs derived from biological macromolecules, as they usually bind to multiple targets. My colleague Jean-Marc Schlaeppi, Senior Investigator in the NIBR Biologics Center, became interested in protein microarrays as a potential method for quickly and conveniently identifying off-target binding activities, as this technique allows



Stefan Muellner and the Protagen team have extensive experience with Tecan equipment

A PowerScanner™ provides high throughput scanning of the UNIchip microarrays

a broad range of targets to be presented in a compact format and is suitable for multiplexing and automation."

"Several life science providers offered protein microarrays at this time," added Xavier Leber, the research associate responsible for the development and running of the protein microarray studies. "Jean-Marc began by assessing which of these best matched our needs, and the Protagen UNIchip performed very well in these initial tests. The Company's staff were also very helpful – taking time to understand our exact requirements before making their recommendations – and so we were confident that the UNIchip was the best fit for our workflow. Although we piloted the use of the Protagen protein microarrays manually, the intention was to employ an automated hybridization system, and the experience that Protagen had already gained using Tecan's HS Pro hybridization stations was also an important consideration."

Stefan Muellner, CEO of Protagen, continued: "We have been using Tecan's HS Pro hybridization stations in both our product development and contract research activities since 2006. These were first introduced to eliminate the variability associated with manual assays, which is particularly important when developing a new commercial product, and vital to our role as a CRO. The innovative design of the HS Pro's incubation chamber also provides very good mixing and distribution of reagents, improving the hybridization quality for all microarray types, and so we were confident that this system would be suitable for Novartis' needs."

Steffen Hartmann continued: "Because we wanted to get the hybridization set-up running as quickly as possible, we were keen to take advantage of the Protagen team's experience and protocols with the HS Pro and, as Tecan has a very good reputation for high quality, reliable products, we were happy to purchase an HS 4800 Pro based on a recommendation from Protagen. We were then able to get up and running very quickly; Protagen provided the basic protocols, as well as a lot of technical information on running the UNIchip arrays, and the HS 4800 Pro's user-friendly design made it easy for us to set up the instrument for our needs. Based on our experiences, we also purchased a Tecan PowerScanner to perform high throughput scanning of the microarrays. This system perfectly complements our HS Pro, and was the only platform on the market which met our workflow requirements."

Steffen concluded: "Our HS 4800 Pro has two extension units, allowing us to hybridize 24 slides in parallel, and our workflow has been designed to minimize hands-on time while offering excellent reproducibility and high quality results. This gives us the ability to quickly perform off-target binding studies for a broad range of candidate antibodies and to change the conditions as required, helping to minimize turnaround times and accelerate the overall candidate selection process."

To find out more on Tecan's HS 4800 Pro hybridization station, visit **www.tecan.com/hs4800**

To learn more about Novartis, go to **www.novartis.com**

To learn more about Protagen and the UNIchip protein microarrays, go to **www.diagnostics.protagen.com**

"The innovative design of the HS Pro's incubation chamber improves the hybridization quality for all microarray types..."

The HS Pro allows the Novartis team to process up to 24 slides in parallel