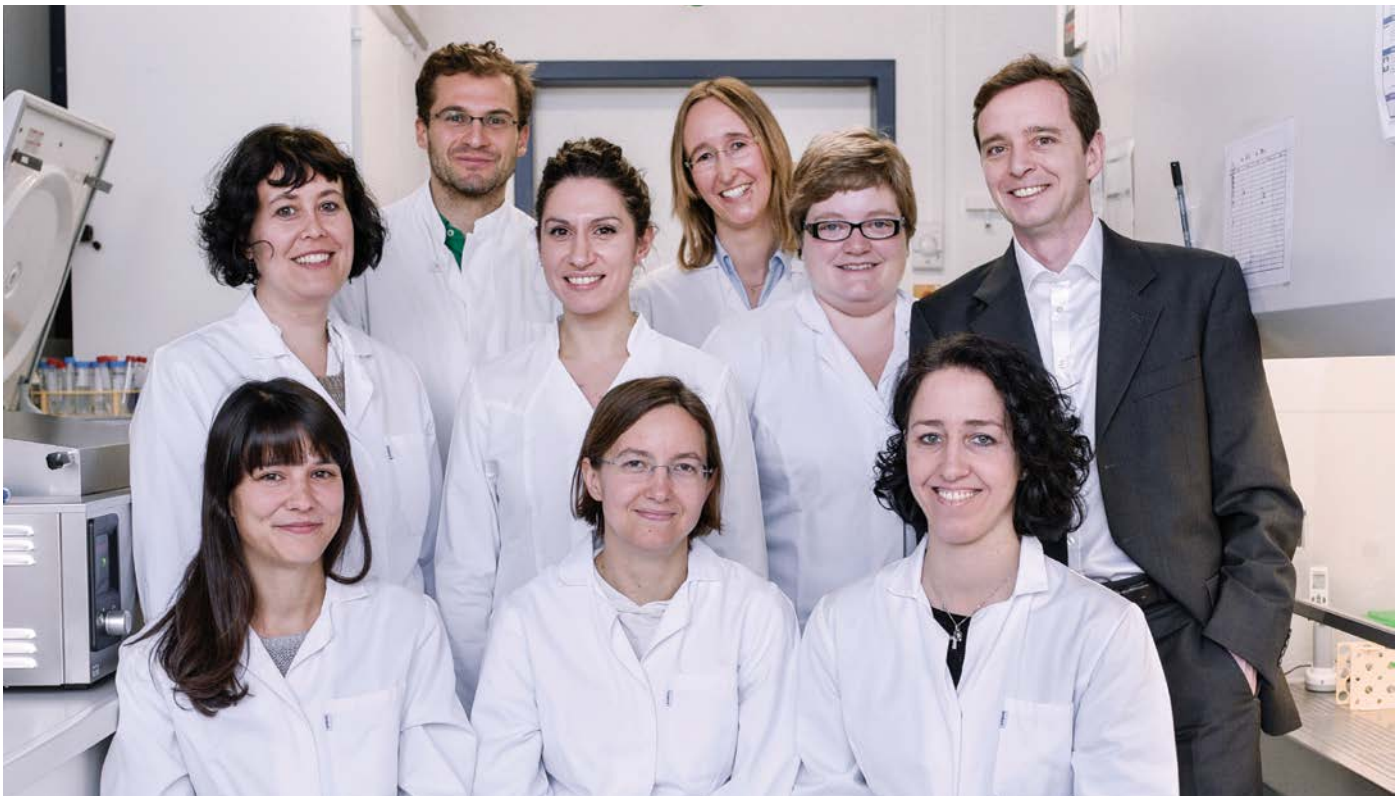
Vectoring in on success

Genetic modification of mammalian cells is now a routine daily activity in academic and industrial R&D laboratories around the world, with viral vectors – such as lentivirus – commonly used to create new cellular models for a wide range of applications. SIRION Biotech specializes in the development of innovative gene delivery systems, helping to improve transduction and performance for both basic research and preclinical studies.

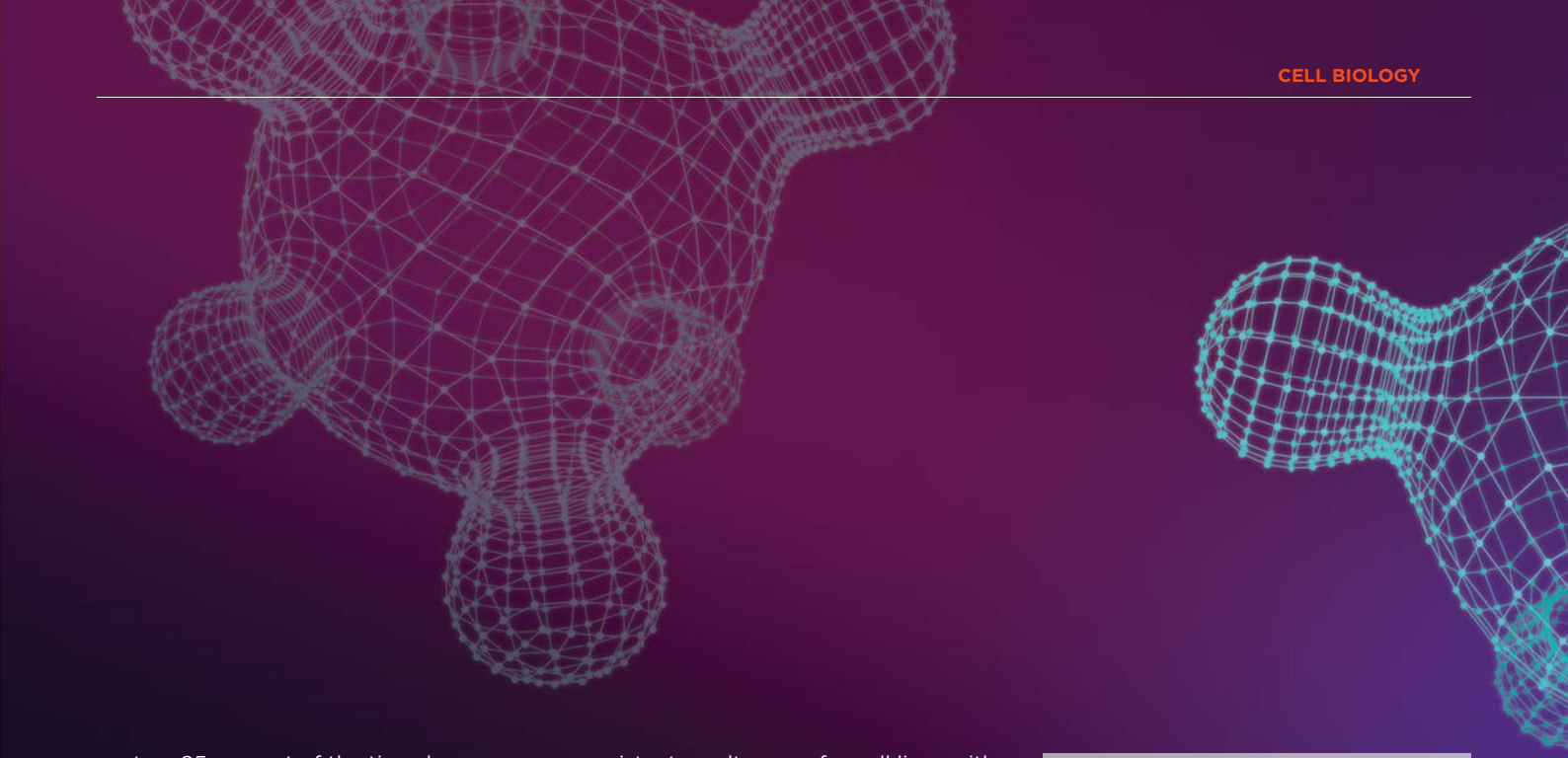
Viral vectors allow the efficient delivery of genetic material into mammalian cells. This technology is now commonly used in basic and medical research, enabling cell and molecular biologists to develop cellular models of healthy and diseased tissues. SIRION Biotech, on the outskirts of Munich, Germany, specializes in the creation of custom viral vectors for a range of industrial and academic research fields, including oncology, neuroscience, regenerative medicine, gene therapy, CAR-T cell therapy and vaccine development. Dr Carl Christel, Senior Manager of Sales and Marketing at SIRION, explained: "Our work centers on providing individually engineered genetic tools to modify mammalian cell lines. A majority of our business is in the preclinical sector, and ranges from designing and supplying viruses for use in external laboratories, to partnerships and collaborations aiming to develop new vector technologies which will later be used in clinical applications, such as gene therapies or the creation of alternative vaccines."

"We work with all the major viral vector systems – adenovirus, lentivirus and adeno-associated virus – offering methods suitable for both *in vitro* and *in vivo* applications. For many clients, we produce small to medium-sized batches of vectors for use in their own laboratories, but we can also build full cellular models to over express, knock down or otherwise regulate one or more genes of interest."

Silke Schrödel, Laboratory Head for Cell Culture, took up the story: "To build a cellular model, we generally start by generating the viral vectors encoding the gene of interest. We use lentiviral



The SIRION Biotech laboratory team



vectors 95 percent of the time, because this allows stable integration of genetic material into the genome of most dividing and non-dividing cells. We then transduce the target cell line using these viral carriers, followed by extensive characterization – including various QC checks and functional assays, depending on the project – and this is the stage where the Tecan reader comes into play."

"We have used an Infinite® 200 PRO to perform functional assays for a number of years now, and have recently begun evaluating the Spark® 10M for several applications. The Spark represents an 'all-in-one' system that is very well suited to our needs, and we have already tested the cell counting, luminescence and confluence modes for the assessment of our cellular models. It is very intuitive, and doesn't require any complex adjustments between cell lines, helping us to accelerate and standardize our processes, as well as ensuring that we meet the highest quality standards."

"The automated cell counting feature is a particularly interesting option, as nearly every new project requires us to handle a new cell line. So far we have worked with over 200 different cell types, and the instrument's cell counting algorithm makes analyzing such a broad spectrum of cell types very straightforward; it is much easier and more reliable than manual cell counting methods. We are also using the cell confluence tool to monitor how specific genetic modifications influence cell growth. This module offers very consistent results, even for cell lines with low contrast. Just like the cell counting algorithm, confluence measurements can be performed without the need for any complex adjustments."

"The system provides a standardized environment for our cells; we have full control over the temperature, humidity and gas partial pressures within the reader chamber. This allows longer in-reader incubations without affecting the consistency of results. The ability to incubate our cells in the reader also allows longer-term studies to be performed, without the operator needing to shuttle the plate back-and-forth between the reader and a standard microplate incubator."

"We pride ourselves on the exceptional quality standards we adhere to for all our viral vectors and cellular models; we feel that this is what sets us apart from our competition internationally. We are trying to stay ahead of the game in terms of quality, and the Spark reader fits well with this high standard. It provides us with a lot of flexibility for different experimental set-ups, helping us to deliver reliable and reproducible genetic tools to our clients," Carl concluded.

> "This allows longer in-reader incubations without affecting the consistency of results."

To find out more about Tecan's Spark reader, visit
www.tecan.com/spark

To learn more about SIRION Biotech go to
www.sirion-biotech.com