

# Life sciences companies follow different paths to success

Nothing signifies Germany's determination to position itself as a hub in the knowledge economy better than its life sciences industry. And, as in other countries, companies in the sector have contrasting approaches to commercialising their intellectual property

By **Liz Rutherford-Johnson**

The German life sciences landscape is an exciting place to be: magnificent vistas, promising views and, in the distance, just over the edge of the horizon, the very real prospect of being a world centre for excellence – catching up with and even beating the US and UK markets. Closer to hand, the landscape is still inspiring, but the footing can occasionally be treacherous.

In the early 1990s the German government began to make a push to build up the life sciences sector and surpass the United Kingdom in terms of leadership in Europe. One of the biggest changes it introduced was to call time on the so-called professor's privilege in 2002. Before this, individual academics were the private owners of their intellectual property; by abolishing this right, universities and research institutions were given a substantial interest in and the option to exploit the intellectual property being created by academics. The Ministry of Science and Education followed this up by supporting the foundation of over 20 technology transfer offices (TTOs), which were designed to provide an array of exciting new inventions for industry to choose from, while helping universities and research institutions gain commercial returns from their work.

## Pairing up

Nature abhors a vacuum and the same is true of the life sciences sector. In this, perhaps more than any other industry area, the name of the game is collaboration – putting people together, making partnerships and developing suitable technology.

The biotechnology firm MorphoSys is a textbook case of how a small firm can partner with some of the biggest pharmaceutical companies on the planet and still retain a stake and its independence. The firm's main invention is its Human Combinatorial Antibody Library (HuCAL), a phage display base library containing over 10 billion human antibodies. HuCAL is used for therapeutic drug discovery with industry partners. The firm also has a separate unit that specialises in providing antibodies to the research community.

Stephen Yoder, head of licensing and intellectual property at MorphoSys, explains that the firm has come up with two primary methods of partnering with big pharmaceutical companies. One is a subscription model, which involves a technology transfer of HuCAL to the partner's facilities. The partner then carries out the initial steps of drug discovery at its own facility and will return to MorphoSys if it needs help along the way or if more commercial licensees are required. However, the company's primary model is collaboration. Here, the partner provides the antigen to MorphoSys, which then applies its technology at its facilities in Munich and delivers a set of antibody candidates for further development. The partner takes this back and works on clinical development, with an aim to subsequent commercialisation. "We've been able to leverage for profitability and we have a good outlook in terms of future growth based on this model," Yoder says.

A swift look at this model of working shows that this is as much about MorphoSys's relationships with its partners as it is about the technology it has to offer.

Claudia Gutjahr-Loeser, head of corporate communications, describes how each partnership is tailored according to the needs of the specific partner. For instance, Pfizer, with which MorphoSys has worked for a couple of years, prefers MorphoSys to carry out the work itself. "They give us the targets, we select the antibodies and then hand the antibodies with the specified criteria back," Gutjahr-Loeser says. On the other hand Novartis, with which MorphoSys has its biggest collaboration (the multinational has an equity stake worth 7% of MorphoSys's share capital) prefers to carry out some of the research work itself. Accordingly MorphoSys technology has been transferred to Novartis sites in several European countries, as well as the United States. "One of our strengths is that we can provide for the different needs of different partners," Gutjahr-Loeser explains. "We can do the work, they can do the work – it's whatever the partner requires and we structure the contracts accordingly."

The firm has managed to balance out some of the asymmetry inherent in a partnership between a smaller firm and a pharmaceutical giant by entering into strategic relationships or licensing arrangements with partners. "Once there is a know-how transfer component there is more flexibility in how you can license a technology, such as in structuring royalty terms and certain restrictions on use," Yoder explains. MorphoSys has certainly found that licensing its patents in conjunction with technology transfers is a good way to do business. "So far, we feel we can generate more value from our IP this way than by licensing our patents independently," Yoder says.

#### The perfect match

If MorphoSys is the perfect dance partner then Ascenion GmbH could set up shop as a matchmaker. As a TTO it essentially acts as an interface between universities and research institutions on the one side, and industry on the other. It is Ascenion's job to bring partners together, make sure they are a good fit and then broker the deal. However, Ascenion has three marked differences from most TTOs operating in Germany. For a start it has chosen to focus on the life sciences sector, thus bringing to bear a degree of specialisation not always found in other TTOs in the country. Second, it has spread its nets much wider than usual: right now it has 14 clients – 13 research organisations in the Helmholtz and Leibniz Associations

and one university, the medical clinic in Hanover. This is a striking contrast to most German TTOs, which serve only one or two research institutions. Third and perhaps most important is Ascenion's commercial savvy: its sole purpose is to generate revenue for its clients from their inventions and it does this in a variety of imaginative ways, from straightforward licensing to equity deals – currently, Ascenion holds equity in over a dozen different companies.

Christian Stein, chief executive officer of Ascenion, explains that when the founding members were putting together ideas back in 2001 they looked at some of the top TTOs in the world – including those attached to the Massachusetts Institute of Technology, Harvard, the Max Planck Institute and the Fraunhofer Institute – to see what made them work so well. "We decided that it had to do with a critical mass; having lots of attractive and interesting inventions in a particular field that made it statistically possible to have good successes in a reasonable timeframe," he explains.

Although Ascenion is run for the benefit of academics, it is not run by them. Instead the firm is able to bring to bear an impressive amount of industry experience and offer its clients an objective, neutral view. "Research institutions quite like to use us to get a healthy perspective for negotiations," Stein comments wryly.

Ascenion has technology scouts in place at research institutions across Germany, on the lookout for interesting new inventions that might be economically viable. If a scout finds such an invention, Ascenion forms a team around it, usually consisting of the original scout and a technology manager. This team will then work out a strategy for commercialising the invention, which might involve suggesting any work that still needs to be done or recommending protection strategies. If the team believes the invention would benefit from being licensed out, then a lawyer is also brought in.

Once everything is in place, the team then starts to look for suitable partners, first nationally, then internationally. Roughly one-third of the deals its brokers are with German entities; one-third with organisations from the rest of Europe (notably Switzerland); and one-third with companies from the rest of the world, in particular the United States, Australia, New Zealand and Japan.

As well as looking after individual inventions, Ascenion also recommends a portfolio strategy to its clients. Most research institutions have certain strengths

Established in 1992, MorphoSys AG is a biotechnology company focusing on human antibodies. It has about 280 employees worldwide – approximately 180 are based in Munich, which is also the site of the firm's R&D department, while the rest are based in the United Kingdom and the United States in sales teams.

One side of the business provides high-quality antibodies to researchers, while the other partners with big biotechnology or pharmaceutical companies to develop drug candidates, using its Human Combinatorial Antibody Library – a technology platform that can be fully licensed out to partners. Currently MorphoSys has active partnerships with about 12 of the top 20 pharmaceutical companies, as well as partnerships with other, smaller ones.

Head of licensing and intellectual property Stephen Yoder explains that MorphoSys's success is down to not only its valuable technology, but also its fully integrated approach to serving its customers both during deal negotiations and beyond, including a strong alliance management function. "We really pride ourselves on our ability to work together with big pharma," he says. By strategically partnering with other, mostly bigger companies, MorphoSys has been able to enjoy impressive returns on its intellectual property. "We're not a typical German company, in that we bring to the table a definite US-focused approach," Yoder says, "I think this adds more value."



**Stephen Yoder**  
MorphoSys

## Collaboration for profitability



**Claudia Gutjahr-Loeser**  
MorphoSys

## Different models for different partners

but there is frequently more than one area of focus – Ascenion will try to put in place a strategy to ensure that its clients' core competencies are reflected in the portfolio.

### Staying professional

These are two very different ways of doing business, but what becomes apparent is the keen professionalism shared by the two companies.

MorphoSys's intellectual property is its most valuable asset and the source of its revenue, so a lot of effort goes into making sure that the company is exploiting every scrap of its commercial potential. This emphasis goes right down to the company's structure. The licensing and IP department comprises just four people: Yoder himself, two European-focused patent colleagues and an attorney who works on all the licensing issues with Yoder. "Our philosophy on maintaining and mining our IP is to try to keep as much in-house as possible," Yoder explains. While MorphoSys does use outside counsel, especially for docketing dates in order to keep deadlines and for second attorney review, most of the heavy lifting is done from within. "We value our law firm colleagues greatly and often call on them to help us crack the tough nuts," Yoder says, "but it's hard for someone external to provide the comprehensive service that we need if our business philosophy is not ingrained into them. It's all to do with having the big picture or the common eye perspective over IP on the business side."

As well as this focus, strong lines of communication mean that the IP department is at the heart of the firm. Yoder explains that he reports directly to the top. "I'm frequently in contact with the CEO, often on a daily basis, to discuss where the company wants to go and how we want to structure our IP portfolios."

In addition, it is important to remember that the department not only oversees the acquisition and monitoring of intellectual property, it also constantly works with the business development department to maximise exploitation of MorphoSys's intellectual property. "The line between the business development group and the licensing side of the licensing and IP department is quite an amorphous one," Yoder comments. "We're involved together from the early stages of the deal all the way through to closure; we get to play off of each other because we know the other department's needs." He feels that this

close integration helps add to the bottom line of the company.

Working hand in glove with the business development group certainly helps to make sure that MorphoSys is not missing a thing when it comes to leveraging value from its technology. It might also be one of the reasons that it is one of the few businesses in this area to be turning a profit.

### Putting a price on your inventions

Looking at new ways to commercialise intellectual property is all well and good, but when it comes to collaborations, both sides have to be able to agree on what an invention is worth in order to hammer out a meaningful contract. This is not as straightforward as it sounds. Valuing intellectual property, especially in the case of a new invention that is untried in the market, is not a straightforward process. It needs not only specialist knowledge, but also a degree of industry experience and an understanding of the costs and pitfalls that can stand between a new invention and it ever making a profit.

However, Ascenion has taken the view that without being able to put a reasonable price on its clients' inventions, it will never be able to secure fair value for them. For that reason it has an in-house analyst on its staff, Dr Zimmerman, who not only is a PhD immunologist but also used to work at Deutsche Bank. Stein says that being able to provide technology valuations has turned out to be a very strong asset when negotiating with industry partners. "Even if we come to different results the tools that we are using are the same," he explains. "When you are talking the same language and following the same lines of argument, it's much easier to come to a conclusion."

Surprisingly, given that this has put Ascenion in such a strong negotiating position, it is still very unusual for a German TTO to have an in-house valuation specialist. Stein sees this as endemic of a general problem with German TTOs. "Making TTOs professional and able to form partnerships with industry is one of the major challenges for the next few years," he says. "Right now they are often too academic and frequently fail to understand what industry wants." In his opinion the problem is a staffing one. In the United States and the United Kingdom, he points out, TTOs are quite independent and professionally staffed by people with industry experience. However, in Germany TTOs are still mainly staffed by academics with no industrial background. As is so often

the case, the issue comes down to money – often there simply is not enough available to get in someone with the right kind of experience. “This was one of the reasons why we were set up as a private company,” Stein says. “It was the only way to get the people we wanted.”

### Blockbuster drugs

In the last year Ascenion has made more than \$5 million for its clients; this is even more impressive when you consider that it does not yet have a regular income from royalties because none of the products that it handles has hit the market. However, this looks set to change in the near future, as of Ascenion's more than 180 sealed contracts about 30 carry a substantial future revenue potential. One of those relates to a product that is now in clinical phase 3 and, all going well, should hit the market within the next few years. This will make an enormous difference to Ascenion's turnover; Stein estimates that this product alone could result in a turnover of several hundred million dollars, possibly more. Another product that Ascenion is finding partners for is in clinical phase 1. Stein is delighted that Ascenion will be able to reap the rewards of its hard work. “We have quite a nice pipeline from the work in the last few years that has not quite made it to the product phase yet.”

### Getting a slice of the pie

However, just because a company has contributed to a project does not automatically mean that it will be entitled to a share in the rewards.

Gutjahr-Loeser explains that MorphoSys is able to ensure a steady income through the model of milestone and royalty payments that it has developed. However, the company is engaged not merely in providing its partners with a technology platform but in developing a source of future therapeutics. “We are involved in the eventual success of potential drugs that come out,” she explains. “This is a very important asset for our investors and our shareholders.” It also means that MorphoSys is able to maximise the returns for its inventions. Often the smartest way to do this is by retaining rights in the product, rather than settling for up-front payments. However, this can sometimes be difficult to explain to investors.

In general, Yoder feels that German biotechnology firms do not have as much leverage in terms of deal negotiation as their US counterparts. He puts this down in part to the dip in the fortune of German

biotechnology after the cessation of government funding in the late 1990s. “Back then there was so much easy money that just about anybody with an idea, good or bad, could get funding for a company,” Yoder explains. Inevitably the situation could not last – public funding dried up and there was not enough private money to keep the biotech bubble going. This led to a market readjustment where quite a few companies, including some of the good ones, went under. Yoder believes it is one of the reasons that European investors have a lower risk appetite than their US counterparts; Gutjahr-Loeser agrees. “I think German investors, in particular, but also European investors, are not ready to invest in companies who say they will make losses for 10 years,” she says. “They are really risk averse here and don't like investing a lot of money in product development when in the end there are no guarantees.”

Yoder believes that the situation has improved in the last five or 10 years. Previously a smaller, and perhaps less experienced, biotechnology company in a partnership with a big pharmaceutical might find itself paid off for its invention in cash. While money is good, Yoder says that the key to getting a good return on an invention is to stay in the game for longer. “Biotechs need to be looking for co-development rights or co-marketing or co-promotion,” he explains, “They need to participate directly in an investment mechanism in order to have a higher upside potential.” Acquiring or not giving up certain rights in the face of product development means biotechnology firms can then generate more long-term value. Of course, staying in the game longer costs more money and a firm needs to have an investment base that supports that choice. Yoder is hopeful that the German market trend will follow the trend set by the United States, allowing German and European biotechnology businesses to command more long-term value and a fuller share of the rewards.

### More than one way to turn a profit

This may seem an alarming scenario for younger companies trying to break into the drug development market, where the average production time is between 10 and 12 years. However, taking a good hard look at your IP portfolio can reveal hidden gems. While blockbuster drugs offer the most spectacular returns, they are not the only way to get value out of intellectual property.

Ascenion's \$5 million profit may not

## The technology transfer office with a difference

Ascenion GmbH is a 100% owned subsidiary of the Life Science Foundation for the Promotion of Science and Research, and was set up in 2001 to help German research institutions realise the commercial potential of their intellectual property.

There are about 20 people at the company, over half based in its main office in Munich with the rest distributed at research institutions around Germany. Ascenion sets itself apart from other transfer technology offices by insisting that its staff have not only expertise in a life science subject, but also experience in industry. “This means that when we approach industry we have a level of expertise and experience for negotiations,” says CEO Christian Stein. “We know what the pharma and biotech industry expects from us.”

Although it mainly handles licensing deals, Ascenion is never a contract partner; it merely negotiates the contract for its client. “We make sure that people stick to the contract, that payments come in regularly and that reporting is done properly,” Stein explains. “We also look for infringements and follow those up.” The one exception to its hands-off approach is for equity contracts, where Ascenion holds equity and ownership in various companies, to circumvent restrictions governing equity held by universities and research institutions. Revenues and sales profits from the companies are then funnelled back to its clients and used to finance further research.



**Christian Stein**  
Ascenion

## *It's all about critical mass*

seem much compared to some of the industry stalwarts, but it is a pretty good return for a TTO that was set up just five years ago and is therefore still a few years away from seeing returns on any potential blockbusters. "A lot of our daily revenue comes from marketing materials and know-how," Stein explains. These might include animal models, compounds and antibodies that are for research use only. Ascenion will generally not recommend patenting these – they are simply not valuable enough – but it can still offer them to industry. "It's a relatively fast way into direct application of a research result in industry, as a lab tool for example," Stein says. "Quite a lot of our basic returns every year come from material transfer agreements or simple know-how agreements or services that an academic institution can offer."

In the same way, although partnered drug development is an important part of MorphoSys's business, the firm also has an in-house development team running proprietary antibody programmes. "This means that we are sourcing our own targets; we have a pre-clinical team in-house that pushes the project forward," Yoder says. The goal is to hold onto the invention in order to generate more value. "At that stage we have to make a determination whether we want to out-license it, develop it or take it even further forward."

### **Strategic thinking**

Ascenion and MorphoSys are examples of two very different businesses in the life sciences sector that are both managing to gain an impressive return from the intellectual property they manage. Their working methods highlight the importance of collaborative relationships in developing drugs and other pharmaceutical products, and bringing them to the market.

Thinking strategically can allow smaller firms to play a meaningful part in deals with some of the biggest pharmaceutical companies in the world. Ascenion's expertise in matching up industry partners to academic know-how highlights the fact that Germany is still a huge source of creative energy, with world-class universities and research institutions, and that there is a real determination to commercially exploit the intellectual property being created there. TTOs are going to have an increasingly important role to play in helping to do this and Ascenion offers its counterparts elsewhere some useful lessons: the importance of staff with industry experience

as well as academic expertise, and that knowing how to value an invention can increase bargaining power.

MorphoSys, meanwhile, demonstrates that partnering with bigger biotechnology or pharmaceutical organisations can be an excellent way of seeing a return from your technology. However, companies should pay close attention when hammering out such contracts to negotiate a stake in the long-term development of a product – only by doing this will they continue to have a say, and see a return, once products reach the market.

The life sciences sector is a long-term one, but the potential rewards are high. In the last few years the German market has been becoming more sophisticated and investors are very slowly getting braver. With such an impressive creative base on which to draw, the German life sciences sector is beginning to fully realise the value of its intellectual property. The future is bright indeed.