- EUROPE – COMPANY OF THE YEAR (BIOTECH), BIOLINGUS
- SWITZERLAND – GAMECHANGER OF THE YEAR (BIOTECH), YVES DECADT, BIOLINGUS

BIOLINGUS

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The non-invasive delivery of biological drugs: a holy grail in the pharmaceutical industry?

Global health continues to be a challenge, and here at ACQ, we like to support companies which make innovative contributions to pharmaceutical research and business practice. We talked to Yves Decadt, CEO of BioLingus, about the company's ongoing biotech research to replace injections of some specific biological medicines with oral pills.

Yves Decadt is CEO of BioLingus, a Swiss biotech company leading the way in developing oral (sublingual) and mucosal delivery of peptides and proteins for chronic diseases and immunotherapies. He argues that the issue is 'hot' in the pharmaceutical industry and that many companies are trying to find a solution to the problem, particularly in diabetes management.

They all have different solutions, ranging from dermal patches with microneedles, intra-nasal delivery systems to oral drugs using different kinds of formulations technologies.

We talked to Yves about his company's distinctive research, and how close we are to disrupting the delivery of biological drugs.

What do you see as the main benefits of sublingual delivery?

Sublingual delivery means under delivery under the tongue.
It's not a new technique in medicine of course, but what is different about our products is that we have developed sublingual and mucosal delivery specifically for biological molecules, and that is new. It creates the potential to change the way we deliver biological molecules in pharmaceuticals.

One of the main benefits is that it is less invasive. Many patients with diabetes, for instance, have to inject themselves daily, so it would radically improve their quality of life. Other potential benefits are the safer and more stable delivery of vaccines, particularly in areas without a stable infrastructure (for instance developing world countries).

What's different about how you are tackling the problem of delivering biological drugs compared to other biotech companies?

The core difference is that we are trying a different approach. Whereas other companies rely on chemical excipients, BioLingus has sought a more natural solution, to battle nature with its own weapons. Nature has an effective means of degrading proteins and peptides in the human body, so we thought that perhaps nature has a way of doing the opposite, which is stabilising proteins and peptides.

If you look at the seeds of plants, for example, they have developed excellent ways of preserving proteins for a very long time, and in the case of the lotus plant, for over 1000 years. BioLingus is trying to mimic those mechanisms because the stabilisation of proteins and peptides at room temperature is the first step towards achieving oral delivery in pharmaceuticals.

Biological drugs are a very important share of the total value of the pharmaceutical market, and this share will increase in the future. Therefore non-invasive delivery of biologicals is called a 'holy grail' of the pharmaceutical industry. Why is that?

That is an interesting question. Holy grails are typically only found in movies, and even in those movies, it is a very idealistic goal. We have to be realistic. Non-invasive delivery, for now, will only apply to a subset of pharmaceutical drugs rather than to all of them. So the 'no more needles' paradigm will remain in the same category of unreachable targets. But 'fewer needles,' I would say, is a realistic goal.

What applications are you seeking to develop?

As a company we have to be pragmatic and focus on those products which not only have a high potential value but also have a good chance of success.

Currently, we are developing oral versions of the diabetes drug Exenatide (a Glucagon-like peptide-1 agonist or GLP-1 agonist).

There are also plans to develop a sublingual cannabis extract. While delivering biological drugs compared to other biotech it's not a "biological" molecule (i.e. not a protein or peptide), we've found that the technology we've developed is suitable for this application.

We have ongoing research looking to develop an oral vaccine for the treatment of leishmaniasis, a much-neglected tropical disease transmitted by sandflies. We are working on developing an orally delivered influenza vaccine, and we are also conducting research on treating early-onset Type 1 diabetes with very low dose oral interleukin-2. It is clear, for example, that very young children would prefer to take a tablet instead of daily injections.

We are always seeking to work with other innovative partners to develop new treatments.

How has your work been received by business, governments and health organisations? Have you encountered any barriers to developing and applying your research?

Our strategy is to try and build a sustainable business over the long-term (rather than looking for an exit in three to four years from now). Therefore, we are also looking for, and are in discussion with, potential partners across the world who share that vision. One avenue in this respect is working with regional companies, such as those based in Asia, to develop and commercialise the products locally.

Regarding potential applications in developing world countries, we have discussed our technology with the World Health Organisation in Geneva. They were very supportive because our technology supports one of their main paradigms of broadening access.

What does the future hold for you and BioLingus?

Well, our company is like a baby, and our dream is that our baby will grow to a healthy adult. An adult that can move the bar a bit in a way that makes the lives of some patients more bearable gain.

Yves Decadt is winner of the ACQ award as "Gamechanger of the Year" in Biotech.