

EP Vantage Interview - Selecta toasts first commercial deal



[Jacob Plieth](#)

Selecta's food allergy vaccine deal with Sanofi might just be an early-stage research alliance with no immediate financial benefit, but it represents the private Massachusetts-based biotech's first tie-up with a pharma company.

Selecta was founded just four years ago on the back of work done at the MIT by the renowned biomedical engineer Robert Langer, and has already raised \$58m. "When Sanofi approached us, food allergy came up [as an area with] very strong potential," Selecta's CEO, Werner Cautreels, tells *EP Vantage*. The deal could validate Selecta's synthetic vaccine particle (SVP) technology, which in a different guise will yield data from its first clinical study in February.

Speaking today from Moscow, where the company also opened a research subsidiary, Mr Cautreels spelled out the initial focus of the Sanofi alliance. This will involve early work on the SVP platform, using Sanofi's expertise to design a nanoparticle-based vaccine that can damp down the immune response in a common food allergy.

He would not disclose whether there was an up-front payment, but said Sanofi would fund this early research. Overall, including development and research-based milestones, this first target could result in Sanofi paying Selecta \$300m, although it would be logical to expect the deal to be severely backend loaded.

Neither has the initial allergen been disclosed, but Mr Cautreels says the target was one with large number of potential patients, which would not rule out the likes of peanut or gluten allergies. Sanofi also has an option to research two additional immunotherapies - one in food and the other an airborne allergy - on similar financial terms.

Biodegradable nanoparticles

The SVP platform involves the design of biodegradable nanoparticles containing specific antigens and immunomodulator adjuvant components. The particles can be injected subcutaneously and - depending on their design - cause either immune system-stimulating or tolerance-inducing effects.

Their beauty is twofold. Firstly the particles do not release their contents until entering through lymph nodes, ensuring that they are "targeted at the immune system", says Mr Cautreels.

The second advantage lies in the flexibility of their design, which the CEO likens to a rational process somewhat akin to structure-activity relationship work in generating small-molecule drugs. Through a "one-step approach" in which the building blocks contained in the nanoparticles are varied, their design can be optimised.

If it seems unusual that Sanofi did not wait for the results of the sole clinical trial of the SVP technology - an 80-patient phase I study of a nicotine vaccine - before signing a deal, Mr Cautreels stresses that since this involves immune stimulation it is not directly relevant to the deal. The important thing, though, is that the trial has already demonstrated the clinical scalability of the SVP approach.

In fact, he says the manufacturing process itself is remarkably simple and capital non-intensive, despite the complexity of the underlying know-how. It is a simple mixing process - "like making mayonnaise" - and can be carried out by a lab technician, he claims.

Tolerogenic blueprint

Selecta's early-stage pipeline includes several other stimulatory and tolerogenic vaccines based on the SVP technology, several of which are subject to partnering with academic organisations.

Through a type 1 diabetes collaboration with the Juvenile Diabetes Research Foundation, "we learned a lot about the design of tolerogenic vaccines", Mr Cautreels says, suggesting that this could have served as a blueprint for the Sanofi food allergy tie-up.

In addition to the \$58m Selecta has raised so far another \$25m is committed by Rusnano, a Russian government-owned entity funding the commercialisation of developments in nanotechnology. It was Rusnano that had backed the biotech company's expansion into Russia.

Rusnano's focus illustrates the growing interest in nanotechnology, and coupled with the rise of food allergies over the past 20 years it could put Selecta in the right place at the right time. But it is a difficult area; despite early promise, immune system-tolerising approaches and allergy vaccine development in general have not previously met with great success.

"We don't underestimate the complexity," says Mr Cautreels.

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