HMi meets... Dr Felix Dahm

Combining old fashioned oncologist intelligence with AI

Dayton Therapeutics, a Switzerland-based clinical oncology company led by a team of experienced oncologists, was established with the aim of identifying compounds for the treatment of new cancer indications with limited therapeutic options. It has developed an AI-powered genetic and molecular research model as an engine to investigate new therapeutic uses of clinical stage drug candidates where initial development has been discontinued.

The firm has identified satraplatin, an antineoplastic agent derived from platinum, as having the potential to make a significant effect in haemato-oncology indications and is developing it as a precision platinum for orphan lymphomas. Satraplatin was previously investigated for use in the treatment of patients with advanced prostate cancer.

Dayton Therapeutics is investigating satraplatin for the treatment of rare lymphomas and has already filed two patent applications – one related to the indications and one around the actual molecular targets in the patients.

The firm aims to launch satraplatin by 2026. Revenues, according to Dayton, could reach almost US$500m.

Intravenous platinum drugs are among the most widely used drugs for cancer treatment. As the first orally active platinum-based chemotherapeutic drug in the world, satraplatin underwent extensive clinical development and trials for the treatment of prostate cancer. It was first mentioned in medical literature in 1993 as a drug that offered great potential. Nevertheless, in 2007, GPC Biotech, which licensed the rights to satraplatin, withdrew its FDA filing for accelerated approval. GPC merged with Agennix in 2009. Agennix went into liquidation in 2013.

In 2020, Dayton Therapeutics acquired all satraplatin related rights and data. The firm is using its research model to investigate new therapeutic uses for the drug candidate based on recent advances in genetics and molecular biology. In laboratory studies satraplatin has been shown to attack specific blood cancer variants.

Compared to other platinum drugs like cisplatin and carboplatin, satraplatin has a milder toxicity profile in terms of damage to the kidneys and nervous system. Extensive clinical safety data is available regarding the use of satraplatin dating back to 2007.

In December 2022, HM*i* caught up with co-founder and CEO Dr Felix Dahm to discuss the next steps in the development and commercialisation of the only oral platinum drug satraplatin for orphan lymphomas, and Dayton Therapeutics' plans to combine proprietary oncologist know-how, AI and data mining to identify other high-yield candidates for cancer indications.

Dahm trained as a visceral and transplant surgeon at the University Hospital in Zurich before leaving medical practice to join the Boston Consulting Group (BCG), where he advised pharmaceutical companies on their growth strategy - in particular in building out pipelines and portfolios.

He was then headhunted by private equity to drive value and grow PE-owned healthcare companies. In 2017, he joined forces with long-term colleague and business partner Dr Gabriel Markson in founding E3 Life, a life science investment boutique, specialising in finding undervalued healthcare and pharma assets with major growth potential. E3 Life has a particular interest in clinical oncology, where developments in molecular biology combined with AI can accelerate cancer therapeutic development and application.

In 2020, Dahm co-founded Dayton Therapeutics, an E3 Life portfolio company, alongside Markson and renowned Switzerland-based experts in haemato-oncology and lymphoma: Prof Dr Christoph Renner (chair of the Hirslanden Cancer Centre and Head of the Haematology and Lymphoma Unit as well as programme director for cellular therapies, and professor for Medical Oncology at the University of Basel), and Dr Thilo Zander (founder and Head of the Lymphoma Service at the Comprehensive Cancer Centre in Lucerne).

HM*i* **What was the idea behind Dayton Therapeutics?**

Felix Dahm (FD) Prof Renner and Dr Zander had previously demonstrated a generic HIV medicine called nelfinavir works in multiple myeloma, so we knew they were serious when they presented satraplatin to us. They showed us the potential of satraplatin in orphan lymphomas and we were blown away.

Dayton Therapeutics was established to harness the huge potential of satraplatin, and to scale the process for other drugs. We wanted to know whether there was a way to scale the investigative and development process for drug discovery – creating an engine that could repeatedly replicate the process of identification of satraplatin for orphan lymphomas: re-invigorate forgotten drugs for new indications, leveraging the latest understanding in molecular biology and AI.

We started building a prototype in-house and connecting to different databases.

We have a prototype where you can type in a drug substance, and it will jump through all the databases and present you with a set of ideas on indications that the drug could potentially treat based on the latest science on its cellular, molecular, and genetic targets.

HM*i* meets...
Felix Dahm

CEO and co-founder,, Dayton Therapeutics

Career
CEO and co-founder,
Dayton Therapeutics (Jul 2020–)
Partner,
E3 Life
(Jul 2017–)
Industry expert healthcare,
Lilja Capital Advisory Partners
(Jun 2020–)
Board of directors, Gessner AG (Jul 2015–)
Scientific advisory committee,
Rockwell Medical Inc.
(Jul 2015–Jul 2020)
Executive committee,
BSN medical (Feb 2014–Apr 2017)
Executive committee,
Gambro (Feb 2012–Nov 2013)
Director portfolio management,
Nycomed/Takeda (Jan 2011–Jan 2012)

Education
Johannes Gutenberg University Mainz,
Dr. med. Medicine
(1997–2002)

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HM*i* So Dayton therapeutics are scaling up the identification and development of clinical compounds using oncologist know-how and amplifying the process with AI and data mining to systematically pursue high-yield candidates for cancer indications of large unmet medical need. How can you compete with the large-scale projects being undertaken by pharmaceutical companies applying AI to drug discovery?

FD Billions of dollars are being invested into AI and drug development, but we think they are making the task too large and that we are better off looking at something smaller to begin with.

We're focused on compounds that have already been tested in patients and have generated clinical data. By then, you've already cleared so many hurdles in terms of toxicity, pharmacokinetics, dose finding, and even efficacy – just like we have with satraplatin, which we aim to get approved in primary CNS lymphoma with a pivotal phase II trial.

We want to look at a small subset of compounds that have passed some development stages but have then fallen by the wayside, where we can truly understand how they work using the latest research developments and what their molecular targets are. We want to determine whether they could be candidates for rare cancers.

That's our focus. That's where we have the brainpower and the combination of human and artificial intelligence to provide judgement. It's a pipeline activity.

HM*i* How are you approaching this process from an investor perspective?

FD We see it as an investment opportunity that is relatively financially de-risked, since a lot of money has already been invested by others.

Most importantly, satraplatin has been very well characterised in almost 2,000 patients, so we know a great deal about the effects on humans. The toxicity profile is very well described, so it's very unlikely we will encounter any new toxicity. We also know that manufacturing is not an issue.

We're pretty sure it's going to be safe, so it all hinges on one question: will it work on the target cancer? All the pointers strongly indicate that it will.

Not only has satraplatin has been very well described and characterised, and been documented in a way that has met the regulatory threshold of being allowed to file - but we have generated some ground-breaking new data showing its efficacy in lymphoma cell lines, and in specific molecular and genetic targets such as Bcl-2 and MTAP. These targets would allow us to further identify patients with tumours most sensitive to satraplatin - where it would have the strongest anti-cancer effect.

From previous development we know that the compound crosses the blood brain barrier, which is important for our first indication, a lymphoma inside the brain. We know platinum drugs are active against lymphomas as a class of disease and we also know that satraplatin is more active than cisplatin, which is another platinum-based drug used for certain types of lymphomas.

I'm confident that we can successfully meet all the criteria of the regulator. That's why, from an investor perspective, we like it. It's not something that is a wild guess, where you have a phase one compound that's never been in a patient and where you have enormous risks. Those compounds might have a 10% chance of making it to the end of development, but I think we're at a 80 – 90% confidence stage with satraplatin. It's an incredibly unique situation where we can stand on the shoulders of giants.

> WE HAVE THE BRAINPOWER AND THE COMBINATION OF HUMAN AND ARTIFICIAL INTELLIGENCE TO PROVIDE JUDGEMENT

HM*i* What is the next stage?

FD There's one big step: a registration trial in patients. But there are a couple of preparatory steps we need to take before we get there.

One is interaction with the regulators. We have finalised a submission to the US regulator, and then there's a similar process for Europe.

We will file for orphan drug designation in both jurisdictions. We also need to manufacture the clinical trials' supply for which we already have a partner lined up.

So far, we've funded everything as private individuals, but the next stage requires millions of dollars. We're looking at US$20m in 2023, and we are currently in discussion with a few select potential investors and commercial partners.

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HM*i* And the end game is a partnership or a sale?

FD Our priority is to find the right partner to launch satraplatin for orphan lymphoma patients and then, using our 'old fashioned oncologist intelligence' combined with AI to run a 'fallen angel machine' that can identify the right assets.

We want to be smart about approaching firms, building an expertise in picking up undervalued drug candidates that for some reason didn't make it, taking a fresh look at them with more molecular insights and a different viewpoint and put them to the right use.

We'll concentrate on finding drugs for oncology, haematology, and immunology. That's where we have the expertise.