Interview

Modulating the Production of Proteins to Treat Disease

Yochi Slonim, Founder and CEO, Anima Biotech

Based in Bernardsville, New Jersey, and Tel Aviv, Israel, Anima Biotech is developing a novel class of drugs called Translation Control Therapeutics, which control the translation of proteins. We spoke with Mr. Yochi Slonim, Anima's co-founder and CEO, about the company's platform and strategy.

Please describe the background to the establishment of the company and its development over the past eight years?

Slonim: Anima really had two phases. The first was an academic research phase, after inventing the core technology idea behind the company, that we could use labeled transfer-RNA (tRNA) molecules to cause the ribosomes to broadcast light pulses as they assemble proteins. We collaborated with the biochemistry lab of the University of Pennsylvania as the primary research partner under NIH grants. We also worked with 17 other universities, on specific target proteins. Fourteen publications came out from all our collaborations. The validation of the science was very deep and broad. That was the academic research phase.

Then we took the technology out of the university and formed Anima Biotech, a development subsidiary, which resides in Israel, where we do all of the R&D today. We built a drug discovery platform around the technology because if you can monitor through light the production of proteins, it can be the core technology of a of a screening platform, where you would screen hundreds of thousands of compounds and discover compounds that modulate the light pulses, when they are increasing or decreasing protein synthesis. Instead of small molecules binding to target proteins, we intervene one step earlier, modulating the production of proteins.

In parallel to building our own pipeline, we recently announced a deal with Eli Lilly, in which we are going to use our technology platform to discover drugs that are translation inhibitors for some protein targets that Lilly selected. Obviously, the targets that Lilly is choosing are hard targets or even undruggable targets with conventional methods.

You are also developing internal programs in fibrosis, respiratory syncytial virus (RSV), oncology, and Huntington's disease. Why did you choose these particular indications?

Slonim: Our platform is of the broadest type possible because it is applicable to almost any target protein. There are companies working in the field of messenger RNA. Some companies, such as Alnylam, which finally had its first drug approved, and Ionis Pharmaceuticals, basically knock down the mRNA. The big problem with this idea and technology is that RNA drugs degrade very rapidly, so they cannot be taken orally. The other problem is that it is a one-way street. You can only knock down mRNAs, but you cannot grow them if they are missing. Looking at the problem of missing protein, there is another platform company, Moderna Therapeutics, which say they can deliver synthetic mRNAs. Anima is in this mRNA area, but with a different approach. Unlike their RNA drugs, with all the delivery problems and other big issues around them, we use small molecules to do what these other technologies together can do. We can either inhibit proteins, or we can increase proteins. We do this by targeting and controlling the mechanisms around protein production.

In fibrosis, our strategy is unique. We basically go after the overproduction of type I collagen. In all the different types of fibrosis, you will see that overproduction of collagen. We can go after this completely undruggable target collagen and control its production. We already have molecules that inhibit collagen production. Interestingly, we also identified compounds that increase collagen, in which, incidentally, the cosmetics industry is very interested, and wound-healing is another skin process that will benefit a lot from acceleration of the production of collagen.

RSV is an inflammation of the upper respiratory system. It is very common, but some actually die from it, especially newborn babies and older people. There are about 200,000 cases per year of death from RSV and it has a huge cost to the public health systems. It is an unmet medical need for over 30 years. With our technology, our strategy here is again completely different from what everybody else is doing. We do not go after the virus. We go after the mechanisms that control the production of the virus as a protein inside the cells. It seems that many viruses have the same mechanism that they use to hijack the ribosomes of the cells and force them to produce their own protein, the virus protein. What we can do here is discover drugs that are basically interfering with those mechanisms. We believe that our technology is a new way to discover antiviral drugs in a very broad way, and maybe drugs that work across large families of viruses. We already validated our discovered molecules on RSV and now testing them against additional viruses.

Yochi Slonim, M. Sc.

In cancer, our target is c-Myc, which is over-expressed protein in many different types of cancer. It has been for 30 years an undruggable target because the chemical structure of the protein makes it difficult or even impossible for small molecules to bind to it. But with our approach, again, we are not interested in the chemical structure of c-Myc, we are looking at how we can control the production of c-Myc by ribosomes. We already have discovered and validated c-myc translation inhibitors.

We also have a program in Huntington's disease. In general, our technology is extremely valuable and provides tremendous advantages in neuroscience because this is one field where seeing where proteins are being made is of tremendous importance. It is not only a matter of knowing whether the protein is being made but where the protein is being made. Our technology visualizes protein synthesis inside cells. You can see inside the neurons where the proteins are being made. In the case of Huntington disease, we are pursuing a new strategy that relies on that aspect of the technology and, basically, that was the reason that we selected that.

We are now running additional programs in earlier stages. Because our technology is applicable across so many therapeutic areas, we have the ability to come up with more programs very quickly, and we will look to create partnerships to develop many of them.

Profile

Yochi Slonim, M. Sc.

Mr. Slonim is a serial entrepreneur with a track record of over 30 years in software and biotech. Prior to Anima, Yochi has built several companies from their early stage, and eventually turned them into successful large exits. He was a co-founder of Mercury Interactive. As CTO and VP R&D from the company's early days, he created product vision and strategy and led a multi-product organization of 200 developers. After going public and reaching revenues of over $1B annually, Mercury was acquired by HP for $4.5B. As Senior VP of products and marketing for Tecnomatix, a public company, he led a 500 people organization of 4 divisions that generated revenues of $100m until the company was acquired by UGS for $230m. In 2000, Yochi was founder and CEO of Identify. The company reached revenues of $50m in less than 5 years and was acquired by BMC in 2006 for $150m in cash.