Research on CRISPR Therapeutics. - 4/10/19

Description: CRISPR Therapeutics, a gene editing company headquartered in Zug, Switzerland., focuses on developing transformative gene-based medicines for the treatment of serious human diseases using its regularly interspaced short palindromic repeats associated protein-9 (CRISPR/Cas9) gene-editing platform.

Its lead product candidate is CTX001 is for patients suffering from dependent beta thalassemia or severe sickle cell disease in which a patient's hematopoietic stem cells are engineered to produce high levels of fetal hemoglobin in red blood cells.

The company is also developing CTX110, a donor-derived gene-edited allogeneic CAR-T therapy targeting cluster of differentiation 19 positive malignancies.

In addition, it is developing allogeneic CAR-T programs targeting B-Cell maturation antigen and CD70; CTX120, a CAR-T cell product candidate for the treatment of multiple myeloma.

CTX130 is for the treatment of solid tumors and hematologic malignancies; programs to treat Hurler Syndrome and severe combined immunodeficiency disease, as well as glycogen storage diseases and programs targeting diseases, such as Duchenne muscular dystrophy and cystic fibrosis.

Ticker: CRSP
Price: $38.82
Market Cap: $2.0B
Performance: +35.9% YTD

Analysis:

As with any pharma/biotech company before we can even begin talking about anything we have to first discuss the problem CRSP is tackling. We know they are focused on curing sickle cell disease primarily but what exactly is it?

Sickle beta thalassemia

It is an inherited condition that affects hemoglobin, the protein in red blood cells that carries oxygen to different parts of the body. It is a type of sickle cell disease. Affected people have a different change (mutation) in each copy of their HBB gene: one that causes red blood cells to form a "sickle" or crescent shape and a second that is associated with beta thalassemia, a blood disorder that reduces the production of hemoglobin. Depending on the beta thalassemia mutation, people may have:

1. Zero normal hemoglobin (called sickle beta zero thalassemia)
2. Reduced amount of normal hemoglobin (called sickle beta plus thalassemia).

The presence of sickle-shaped red blood cells, which often breakdown prematurely and can get stuck in blood vessels, combined with the reduction or absence of mature red blood cells leads to the many signs and symptoms of sickle beta thalassemia. Features, which may include anemia (low levels of red blood cells), repeated infections, and frequent episodes of pain, generally develop in early childhood and vary in severity depending on the amount of normal hemoglobin made.

What are some other issues people with this disease have?

- Pulmonary hypertension
- Acute chest syndrome (pneumonia-like condition due to entrapment of infection or sickle cells in the lungs)
- Stroke
- Enlarged spleen and/or liver
- Heart murmurs
- Delayed puberty
- Slowed growth
- Jaundice (causes your skin and the whites of your eyes to turn yellow)

Who can get this disease?

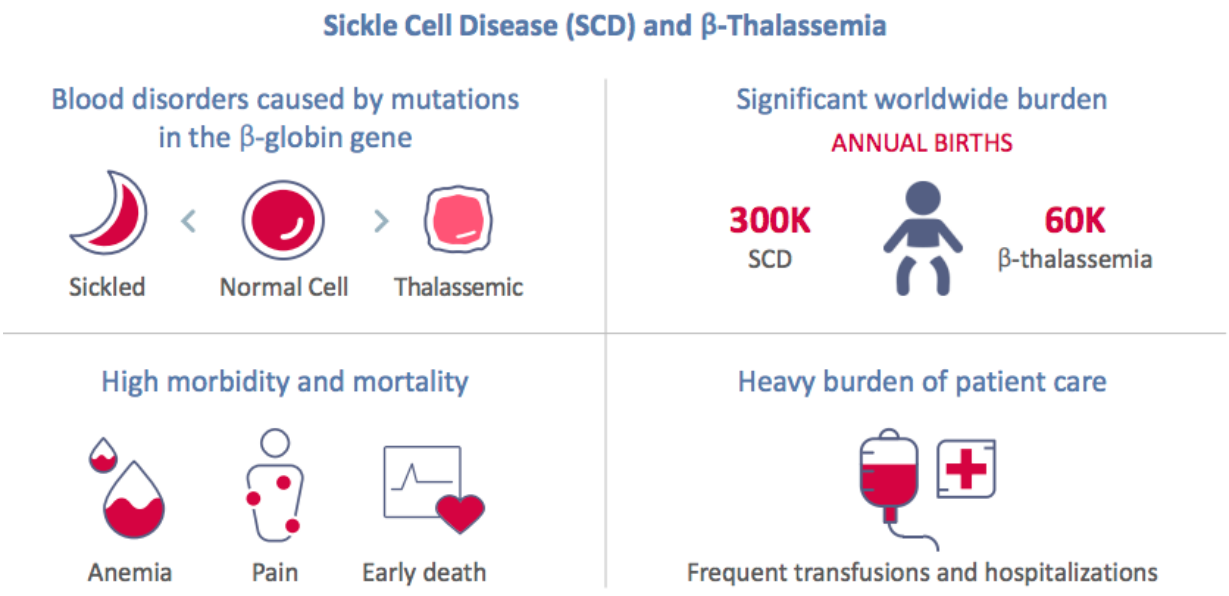
When two carriers of an autosomal recessive condition have children, each child has a 25% risk to have the condition, a 50% risk to be a carrier like each of the parents, and a 25% chance to not have the condition and not be a carrier.

How many people have sickle cell disease?

Sickle cell disease affects the black community almost exclusively. About 10% of blacks in the United States have one copy of the gene for sickle cell disease (that is, they have sickle cell trait). People who have sickle cell trait do not develop sickle cell disease, but they do have increased risks of some complications such as blood in their urine. About 0.3% of blacks have two copies of the gene. These people develop the disease (as mentioned above).

It is estimated that:

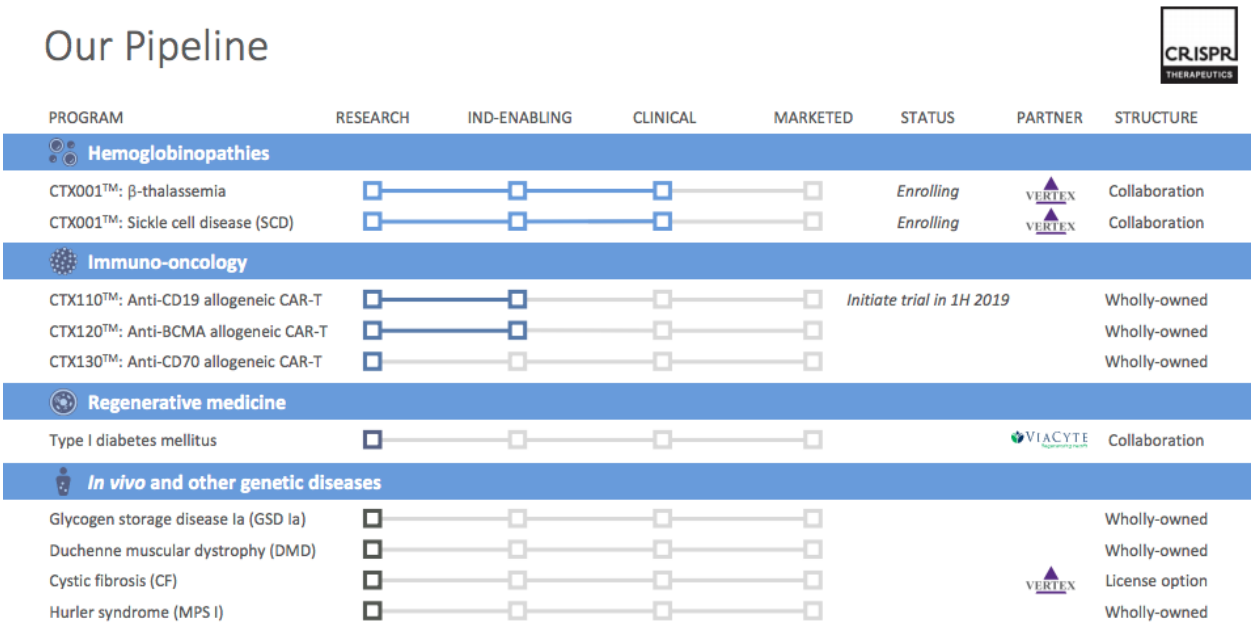
- SCD affects approximately 100,000 Americans.
- SCD occurs among about 1 out of every 365 Black or African-American births.
- SCD occurs among about 1 out of every 16,300 Hispanic-American births.
- About 1 in 13 Black or African-American babies is born with sickle cell trait (SCT)
- ***Mean age of death is 44 years old***



Let's now turn back to CRSP and where they currently stand in getting CTX001 to market as it is apparent there is a need for cure:

At this moment, CRSP has enrolled in a Phase 1/Phase 2 trial of CTX001 in patients with sickle cell disease in the U.S. The gene therapy also is under investigation in a Phase 1/Phase 2 trial that is enrolling patients with beta-thalassemia in Europe.

Now off the bat we might be thinking that CTX001 is a long way from getting approved, and they kind of are, but some of the reason shares are up nearly 40% YTD is because CRSP was able to get FDA approval for fast track designation for CTX001. In other words, they've been granted an expedited reviewal process for their drug.



How did they get fast-tracked?

According to the FDA, CRSP met the following requirements:

The drug being created has to be unique and towards an unmet need. Any drug being developed to treat or prevent a condition with no current therapy obviously is directed at an unmet need. If there are available therapies, a fast track drug must show some advantage over available therapy, such as:

- Showing superior effectiveness, effect on serious outcomes or improved effect on serious outcomes
- Avoiding serious side effects of an available therapy
- Improving the diagnosis of a serious condition where early diagnosis results in an improved outcome
- Decreasing a clinical significant toxicity of an available therapy that is common and causes discontinuation of treatment
- Ability to address emerging or anticipated public health need

Now that CRSP is fast-track approved they will have:

- More frequent meetings with FDA to discuss the drug's development plan and ensure collection of appropriate data needed to support drug approval
- More frequent written communication from FDA about such things as the design of the proposed clinical trials and use of biomarkers
- Eligibility for *Accelerated Approval and Priority Review, if relevant criteria are met*
- *Rolling Review*, which means that a drug company can submit completed sections of its Biologic License Application (BLA) or New Drug Application (NDA) for review by FDA, rather than waiting until every section of the NDA is completed before the entire application can be reviewed. BLA or NDA review usually does not begin until the drug company has submitted the entire application to the FDA

We took it a step further in our research and found this:

Ultimately, the Fast Track program has been deemed a success, with approximately two thirds of all 770 Fast Track requests approved by the FDA from 2007 to 2015, according to the Government Accountability Office (GAO).

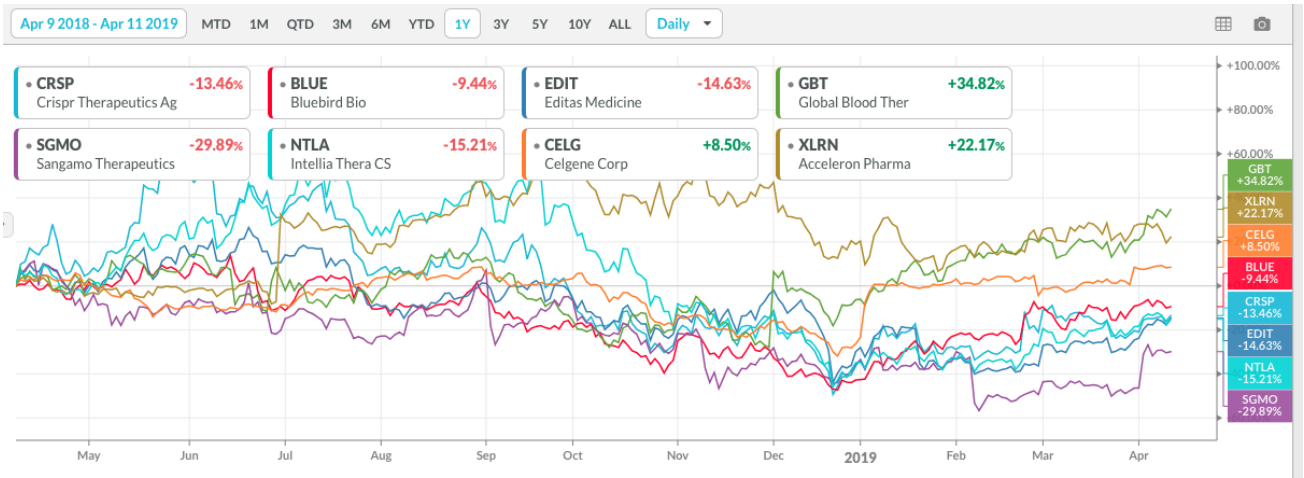
We have to mention though that this expedited process, though it propped up the share price, doesn't mean CRSP is a lock, nor does it mean that the process will actually go faster. We've seen cases where it can still take years upon years to get approval but the fact that

they got it can only be a pro and not a con and also speaks to the legitimacy of the solution they are trying to provide the market.

In their recent earnings call, CEO, Dr. Samarth Kulkarni added: “Over the next two years, we expect to generate data from clinical trials across multiple indications as we bring CRISPR technology to patients. In addition, we are making deliberate steps to scale the Company as we advance programs across a number of therapeutic areas while continuing to bolster our proprietary CRISPR platform.”

So off the bat we know from management that we shouldn’t expect any notable revenues for at least two years as they conduct their trials. The expedited approval did help shares but we must also add that the money flow back into biotech names brought the whole tide higher.

Moving along, with great problems comes great solutions… and great competitors. CRSP certainly isn’t alone in this space. There are other companies out there like Bluebird Bio (BLUE), Celgene (CELG)/Acceleron Pharma (XLRN)- with CELG being bought out by Bristol Myers Squibb (BMY), Sangamo Therapeutics (SGMO), Intellia Therapeutics (NTLA), Editas Medicine (EDIT), and Global Blood Therapeutics (GBT) all of which are either attacking the gene therapy/editing space and some even going right for SCD like Bluebird who is currently well ahead on the timeframe than CRSP.



1-YR Chart

Financial/Technical Analysis

Since CRSP doesn't really have any revs it doesn't leave us too much room to analyze the financials. The company currently has $456.6M in cash which is a nice chunk to invest in R&D and float selling, general, and administrative expenses. Free cash flow burn is around $50M a year (been trending upwards) so the cash is more than enough to hold them over for a while.

All in all, this is really a game of technicals and even that can only take you so far. Clinical trial companies, especially ones in this space of gene therapy/editing, are extremely risk and generally move in-line with their industry peers.

Looking at the chart above, we'd say CRSP wants to give the $40 mark a shot but based on what we see from RSI, MFI, Bollinger Bands, Fibonnaci levels, moving averages, and Williams %R indicators it's going to meet a ton of resistance at $40.00, $40.15, and $41.03. In the case that shares do break beyond these levels, it will probably open up a big move to $45.58 which is the next level of resistance. If it fails breaking $40, we can see a retracement to $35.59 which is the 100-day moving average and roughly the middle channel of the Bollinger Bands.

Since the industry is so volatile and young in its days we'd say CRSP can earn a spot in your portfolio but it shouldn't be a position too large, the max we'd do is a mid-single digit allocation. If, for example, you're looking to own this industry and want a 5% allocation, you can grab a 1% stake in 5 different names like those mentioned above this way you take some risk off the table. If you are in fact going to own companies like these they will take a considerable amount of active monitoring as setting and forgetting these kinds of investments can cost you quite a bit and are used by many as simply trading tools until legitimate revenue is on the financials. In other words, expect insane volatility and if your stomach can't handle wild moves on zero news than this certainly isn't the space for you.