

Navigating the Future in a Sea of CRISPR Uncertainty: Contemplating Map Essentials

June 28, 2019

Is this a journey worth celebrating?

Opening Words

“We receive fragments of holiness”

Sarah York

We receive fragments of holiness,
glimpses of eternity, brief moments of insights.
Let us gather them up for the precious gifts that they are, and,
renewed by their grace,
move boldly into the unknown.

We have spent the last five days together gathering up our own moments of insights and sharing them with one another. In this space we considered questions that I suggested were vital to navigating the future given the uncertainty surrounding CRISPR technology. *The one thing we know for certain is that a future impacted by CRISPR technology is a given, whether or not the maps we need to safely navigate our way have been drafted. The CRISPR boat has set sail and we are on our way.* Our final chapel question,- “Is this a journey worth celebrating?” If you are feeling a bit conflicted about your own answer to that question rest assured that you are not alone. You are in some very rich company, literally. Bill Gates is struggling right along with you. I find that fact comforting because I want the people who have the means to impact the use of this technology wrestling with the same questions that all of us are.

In June 2018 Bill Gates published an editorial entitled “Gene Editing for Good: How CRISPR could transform global development. “ As you might guess he was encouraged by the possibilities CRISPR gene editing offered for feeding the world and eliminating diseases; making crops and farm animals more abundant and resilient, creating the possibility of food production matching predicted population growth; using CRISPR gene editing of mosquitos to tackle malaria and the Zika virus; *and all of those advances impacting for good the poorest communities around the globe.* In June of 2018 Gates was convinced that “...eliminating the most persistent diseases and causes of poverty will require scientific discovery and technological innovations, including CRISPR gene editing.” He also noted the importance of regulating gene-drive research on organisms and doing so in a way that involves international organizations working to establish global norms and guidelines that potential funders could then require their grant recipients adhere to. His final words in that 2018 editorial were a clear statement in support of the technology, responsibly applied:

“...it’s important to recognize the costs and risks of failing to explore the use of new tools such as CRISPR for global health and development. The benefits of emerging technologies should not be reserved only for people in developed countries. Nor should decisions about whether to take advantage of them. Used responsibly, gene editing holds the potential to save millions of lives and empower millions of people to lift themselves out of poverty. *It would be a tragedy to pass up the opportunity.*”

By the end of December 2018, after the announcement of the first CRISPR babies, Gates' confidence in CRISPR technology is shaken and in his end of year blog post he shared his concerns:

“I agree with those who say this scientist went to far. But something good can come from his work if it encourages more people to learn and talk about gene editing. This might be the most important public debate we haven't been having widely enough. The ethical questions are enormous. Gene editing is generating a ton of optimism for treating and curing diseases, including some that our foundation works on (though we fund work on altering crops and insects, not humans). But the technology could make inequity worse, especially if it is only available for wealthy people. I am surprised that these issues haven't generated more attention from the general public.”

(Hmm, is it too late for IRAS to ask for a donation from Bill Gates?) Gates' concerns focused on equity issues surrounding the application of the technology, but we know there are other first order concerns about gene editing, like whether or not we can ever predict with certainty the outcome of tinkering with genomes? Jim Kozubek, author of “Modern Prometheus” thinks not, particularly in reference to the human genome. We are all familiar with the reasons why. Genes can have more than one function, in one scenario predisposing us to risk and in another providing a fitness advantage. And when we think about possible enhancements to the human genome, like removing unwanted traits, maybe autism or psychiatric disorders, or

encouraging desirable traits, perhaps intelligence, we know it is never a matter of editing a single gene.

But what about the hope CRISPR technology offers individuals suffering from single gene diseases, or cancer, that might be treated by editing their own non-germline cells? Or all the research being done to understand diseases using cells and animal models that CRISPR technology has made possible? As long as we can address equity issues, and we proceed responsibly with animal models, being mindful of their inherent worth and dignity as well as our own, I would say a celebration is in order.

When it comes to celebrating the challenge may be multiple parties, some happening sooner than others, because the technology is advancing quickly and in a climate of international competition. There is not agreement on the level of acceptable risk for experiments with gene therapy, clinical trials are happening sooner in China than the U.S. And we just learned last week that there is a scientist in Russia who is preparing to follow in the footsteps of He Jiankui and use CRISPR to edit human embryos to guard them against contracting HIV from their HIV-positive mothers. He claims there is a clinical necessity because the mothers do not respond to standard treatment for HIV. For now he is awaiting approval from Russian agencies to proceed, but if he was certain of the procedures safety he concedes that he might move forward without approval and is stated as saying "I think I'm crazy enough to do it."

And that statement reminds me of another scenario we have not discussed, at least not during our time together here every morning, -what about the

premeditated use of CRISPR for evil ends, as in bio-terrorism or military superiority? In all honesty, I just refuse to begin my day by focusing on the worst things human beings are capable of doing to one another, but I hope somebody else is. *Selfishly, I'd rather begin my day remembering those fragments of holiness and moments of insight I experience, gather them up for the precious gifts they are and renewed, move boldly into the unknown.*

The title I chose for our chapel series this week was “Navigating the Future in a sea of CRISPR Uncertainty: Contemplating Map Essentials.” It’s Friday and we have been contemplating all week. I’m feeling the same way I feel on those Friday evenings when it has been my week to cook and that timeless question is uttered yet again- “What’s for dinner?” I pull out all the leftovers and remind everyone where the microwave is. I call it “week in review”.

Ready?- Chapel week in review...

We all have to work on our own maps. Here is how mine is shaping up. Who do I trust? –I want to be generous with my trust and encourage an open exchange between scientific and religious insights, *but I won't be blind to the challenges or failures of either.* How do I define humanity? –It’s a slippery definition, whether defined in religious or scientific terms. Evolution is ongoing and Homo sapiens have already inserted themselves into the process with culture and technology. Our ability to do so is rapidly escalating. My definition of humanity is action orientated and describes a particular way of being in the world; *being human now means balancing great power with great responsibility.* How do I imagine the future?- Mine is an anticipatory vision, I live in a cosmos that is still a work in progress which

means my actions can either advance a just future or impede it, but I think Theodore Parker and Martin Luther King were right, *the moral universe is bending toward justice*. Who gets a voice in the imagining? -I want to cast my net wide and pay particular attention to those who have not been included in the past. Taking that seriously means I focus more on how I issue the invitation rather than being determined to inform the unformed; *remembering that listening matters as much as speaking*. When is it time to act?- Thoughtful deliberation is important, but inaction has a cost as well, I tend to favor action. But *keeping in touch with the “why” of my actions can help inform the “when.”*

I believe CRISPR technology, despite the uncertainties, does offer us reasons to celebrate our journey into the future. And our religious and spiritual insights remind us how to make sure that journey is worthy of celebration.

More than one time this week I have heard you IRAS veterans say “There’s just something about Star Island.” I think I get it now. When I put these remarks together, over a week ago, I especially wanted to choose my final closing words carefully. My final insights for living with the reality of CRISPR. I am a Unitarian Universalist, I chose the same words David, an Evangelical Christian, did for the final remarks of his presentation. Somehow, on Star Island, this makes perfectly good sense.

Closing Words

Micah 6:8

He has shown you, O mortal, what is good.

And what does the Lord require of you?
To act justly and to love mercy
And to walk humbly with your God.

So let it be. Amen.