

## Orig3n Blog: The End of Trial-and-Error Medicine

Today, when you go to the doctor to have something looked at or treated — and this could be anything from a stuffy nose to a broken arm to a cancer diagnosis — your doctor will inevitably follow the same standardized treatment process that pretty much every doctor around the world uses for every patient they see with that particular condition.

Oh, it might be a *little* different — if they know a little more about your medical history, say — but generally, they'll go through the same steps to diagnose you, and the same steps to treat you, as they use with everyone else: “OK, we'll try *this* first, and see if it works.” If it does, great! If not, they'll move onto the next thing. And the next. And the next. Until they eventually find something that works... or run out of things to try.

These treatment processes were specifically designed this way to make sure as many people as possible are accounted for — the more things you try, the best chance you have of helping the most people. The problem with putting everyone on the same treatment path, though, is that that not all people are the same.

If you've got a sinus infection, for instance, maybe they'll start you off with an antibiotic — a good antibiotic, one they've found works on 75% of people.

But maybe you're part of the 25% that antibiotic doesn't work so well for. Or maybe you experience uncommon side effects from the antibiotic that are actually way worse than the condition itself. Or maybe you're allergic to antibiotics altogether. So you try something else. And something else. And hopefully, eventually, you do find something that works for you. The thing is, to get to that point, you might have had to try a lot of treatments — each with their own side effects, additional wait times, extra appointments, and costs. And all the while, you've still got that stuffy nose!

We call this “trial-and-error medicine,” and while it's usually good at *eventually* finding you a treatment that works, it's the “eventually” that bugs us here at Orig3n. “We've all gone through this,” says Robin Smith, CEO of Orig3n. “The multiple doctor visits. The long, drawn-out recovery process. We figure there has to be a better way.”

One of the most exciting things about our work with regenerative medicine is the possibility of more *personalized* forms of treatment. Most of the work we're doing here at Orig3n involves these special type of cells called iPS cells. Using iPS cells, we can take just a bit of your blood and reprogram your blood cells back into the state of stem cells. Then, we can take those stem cells and transform them into virtually any other type of cell — heart cells, brain cells, liver cells, and more.

“What's really interesting, though,” says Smith, “is that these cells we've created, even though they exist outside of your body, behave *exactly the same* as the cells you have inside of you.”

“So, for instance, if we use your iPS cells to create heart cells,” says Smith, “those cells actually *beat in time* with your own heartbeat. Which I know sounds totally crazy. But it’s true!” The ability to model a particular individual’s unique physical responses outside of their body opens up a lot of possibilities.

“Let’s say you have a genetically inherited cardiac disorder, like Long QT Syndrome, which makes your heart beat irregularly. Any heart cells we create from your sample will beat with that same arrhythmia,” says Smith, “which means we can now test different treatments — or even entirely new drugs — on those heart cells instead of on you. This will allow us to see ahead of time what’s actually going to have the best chance of helping you, or if there are any side effects, without ever actually having to test anything on you as a person.”

The ability to work with a person’s own cells outside of their body will make it much easier to quickly dial in on the exact right treatment for that particular patient. That means faster results, more accurate treatments, and better outcomes, with less suffering, waiting, and hassle. No more trials, no more errors.

And this is only the beginning. Tapping into the power of these iPS cells, our research team at Orig3n is also working on more advanced treatments, where new organs and tissues can actually be regrown and repaired using your very own cells, so they’re a perfect match for transplantation.

In time, we’re hoping to achieve a healthier future where everyone can have their treatments personalized to them — quickly diagnosing exactly what’s wrong with you, and finding the exact right treatment for your needs.

That’s our goal here at Orig3n. And we think it’s happening sooner than you’d think. We’re actively working to drive the field of regenerative medicine, so we can put an end to trial-and-error medicine and offer more personalized treatments to everyone. We’ve already created the world’s largest bank of donated cell samples, and now we’re using those samples to actively drive our research. To learn more about the work we’re doing with regenerative medicine — and what you can do to help — check this out.