

Lessons from Life's Laboratory

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As a scientist, I make observations that help me develop explanations for what I see in the laboratory. These explanations are called hypotheses, and they can be tested in the laboratory to determine whether or not they are true. An example of a hypothesis that I might make is “because chemicals A and B are known to be reactive, I reason, or ‘hypothesize,’ that if A and B are mixed together, they will react and form product C.”

One of the first challenges that we as scientists face in testing our hypotheses is to determine the “definitive test,” or the analysis that allows us to unequivocally establish whether or not our hypothesis is correct.

While many times our hypotheses can be simply stated, actually testing whether or not our expected outcomes materialize can be tricky.

Let me give you an example of a simple experiment. If I mix solutions A and B—both of which are clear but reactive—I predict, or hypothesize, that when they are mixed, they will form product C, which is colored. Let’s watch this experiment.

[A video of a science experiment was shown; more.byu.edu/burton1.] Here we have

clear solution A, in which we pour solution B. Product C, which is dark colored, eventually develops. [Video ends.]

As we saw, product C was dark blue, and thus its presence was quite easy to detect. But did you notice that there was a time element involved in this test? If we only watched for the first seven or eight seconds, we would not have seen the colored product C and would have erroneously concluded that the prediction was incorrect. The take-home message from this experiment is that in order to really test the prediction we had to be willing to wait long enough for things to happen. Stated differently, we needed a degree of patience.

Another frequent outcome of scientific experiments is that they don’t always work as we expect.

Let me show you another experiment that illustrates this principle. In this example we’re going to watch as an ice cube is placed on top of some gray powder. Based upon previous experiences of mixing water with such

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powders, you might suppose that we'll get a pile of damp gray powder or gray mud.

Let's do the experiment and see what happens. I should caution you that this is not one that you want to do at home!

[A video of a science experiment was shown; more.byu.edu/burton2.] Here is our gray powder, and here is the ice cube. The powder explodes and burns. [Video ends.]

I suspect that's not the outcome you were predicting, and you may have been surprised by what you saw. While these types of experiments have surprising conclusions, such outcomes can be truly enlightening because they lead us to think more deeply and often generate important new understanding and knowledge. However, they can also be discouraging because we don't immediately understand what has happened. In this case we may give up and, in doing so, fail to gain the understanding and new knowledge that we could have received.

The reason that I have taken time to discuss how scientists learn in their laboratories is that I believe there are similarities between how and what we as scientists learn in our laboratories and how and what we as brothers and sisters in the gospel learn from the experiences of our lives. I would even go a step further and suggest that the process of learning that each of us undergoes in our lives might be described as "learning in life's laboratory."

How is it that learning in life's lab and learning in the science lab are similar?

We as brothers and sisters experience situations in life and try to understand them in the context of what we know and what we have previously experienced. While we don't often make formal hypotheses, we do try to understand the meaning of our experiences and to learn and grow from them.

Just as in the experiment with the ice cube and the gray powder, sometimes what we experience is not what we expect or predict or

even desire. Another way of saying this is that "sometimes our lives simply don't go as we plan."

Applying this to life as a college student, examples of things not going as planned might include a low exam score after hours of studying or a relationship that just doesn't turn out as we hoped or a disappointing response to applications to graduate or professional schools or for work.

Just as we have seen in the science lab, these unplanned and unexpected results in life's laboratory can be at times confusing, frustrating, and discouraging.

Today I would like to share three lessons that I have learned from the experiences from my life. I do so with the sincere hope that these lessons might in some way be helpful to you.

The Lesson of the Green Table

The first lesson that I would like to share is one I call the Lesson of the Green Table.

In my bedroom as a child there was a small, green table. There wasn't anything special about this green table, other than the fact that I played on it frequently. One of my treasured possessions as a young boy was a genuine cavalry fort and soldier set from a classic American TV adventure program entitled *Rin Tin Tin*.

During the day I would get out the *Rin Tin Tin* set and line up the toy soldiers and their horses on the green table. In my imagination I would send the cavalry troops out on exciting adventures to rescue the innocent from some impending disaster. As a young boy, it just didn't get much better than that.

At the end of the day I would put away my toys, and the green table became the place where my parents and I would meet as they taught me to pray. I remember vividly my mother or father or both coming into my room and teaching me to kneel down by the green table and say my prayers. I don't remember much about those simple prayers, but I suspect

they contained my thanks for my toys, my love for my family members, and some simple requests for things that seemed important to me at the time.

And yet this was one of the great training events in my life.

As a result of this training and experience, I don't ever remember questioning whether my Heavenly Father was on the other end of my prayers. I didn't think this belief was particularly unusual until I spoke with some of my friends who didn't share my beliefs. As the years went by, the green table and my toys eventually disappeared, but my prayers and my faith that they would be answered did not disappear.

Many of my prayers were undoubtedly for trivial things, but as I grew and gained more experience, my prayers became highly focused and intensely sincere as I pled for help with the challenges of my life.

One day when I was probably about eight to ten years of age, I came home on a Saturday afternoon to find my father outside our home, wandering about in a dazed and not very coherent manner. I had never seen my father like this before, and I became genuinely worried about him. I went to get help, and we were able to get my dad into bed and call the doctor. While we waited for the doctor to come and help my father, we investigated and found a ladder tipped over the steep stairs that led down to our basement. We surmised that my dad had been trying to change the light bulb over the stairway and, in the process, had fallen from the ladder onto the long row of stairs that went to our basement. This apparent fall had left him in a state that I had never witnessed before. This was a crisis in my young life, for I had no idea whether my dad's injury was truly serious or not.

Based on my previous experiences at the green table, I went into my room, where I knelt and pled with my Father in Heaven to help my earthly father to be all right. As with previous

prayers, my Heavenly Father answered my plea for help, and my earthly father recovered nicely. This and a number of other experiences with prayer helped me to develop great trust and faith in my Father in Heaven and in prayer.

While the childhood experiences are long since gone, life's challenging experiences continue. When I was your age, I was intent on going to medical school. My life was planned around this goal. As often as I could, I went to hospitals to shadow physicians I knew, and I worked in a clinical laboratory to gain experience. Just as it is now, getting into medical school in my day was intensely competitive. I made this goal a matter of sincere prayer, asking for the help that I needed to accomplish my goal.

I applied to medical schools several times and kept praying for success. After many months and nothing but rejection letters, an answer to my prayers was received. The answer that came into my mind was a very distinctive impression that "all would work out well," and it was accompanied by an intense feeling of peace. This made me feel good, and I interpreted this answer to my prayer as meaning that I would be accepted into medical school and live happily ever after.

But this was not to be. No acceptance letters came after months of trying, and it became time for me to graduate. I ended up working for a few years while I struggled to figure out what to do with my life that wasn't going as planned. I decided that if I couldn't go to medical school, I needed to move on and make a new plan for a career. Because I loved the sciences—immunology in particular, which is the study of the body's immune system—I decided to continue my education in this subject. My wife, Ann, and I did what was needed to make this new goal a reality. She sacrificed greatly for me to be able to go back to school for master's and doctoral degrees and a postdoctoral fellowship—some nine and a half years of

additional education that took us from coast to coast. The long and the short of this story is that “everything did indeed work out,” just as the answer to my prayers had indicated, even though it didn’t work out in the way that I initially had anticipated or in the time frame that I had expected.

As I look back upon my life, great blessings have come to us because I didn’t go to medical school. I am involved in a career that I absolutely love, and it has brought great blessings, wonderful people, and fascinating experiences into my life.

I suspect that there are those in the audience today for whom life will not work out as you plan or expect or anticipate. For example, you also may not be able to do what you always planned on doing, or challenges may occur that you didn’t anticipate.

The concrete lesson that the green table experience has taught me is that we have a loving and kind Heavenly Father who answers our prayers and who will help us in our lives. I have also learned that what is important to me also seems important enough to my Heavenly Father that He will listen and answer in a way that is truly best for me, just as He will answer in the way that is best for you.

The Lesson of the Berlin Wall

The second lesson that I would like to share is what I call the Lesson of the Berlin Wall.

In August 1989 I was able to visit Berlin to attend a world conference on immunology. This was a very special event for me for a number of reasons that were not all related to science. I was raised in a family of German missionaries. My father and brother, my aunt and uncle, and my cousins had served missions in Germany and spoke with great love for the country and its people. This was also a moving time for me because my German missionary father had passed away a few months prior to this conference.

My uncle and aunt, who had spent a considerable portion of their lives serving in Church callings in Germany, knew that this was a tender time for me, and they were gracious enough to contact their friend, Dieter Berndt, in Berlin to see if there were any possibility that I could stay with him during my short visit. Brother Berndt graciously invited me to stay at his home, and I had the opportunity of a lifetime to interact with him and his family in a city that my father had served in.

At the time of my visit Berlin was a divided city due to the presence of the Berlin Wall, which was erected in August 1961.

[Image of the Berlin Wall shown.] This is a snapshot of the Berlin Wall that doesn’t show the barbed wire, the armed guards, or the gloom that was associated with this wall. However, it clearly shows the division that it brought about in the city of Berlin.

This wall broke Berlin into the free western portion and the communist eastern one. Two separate governments ruled the city, and each had a very different philosophy about life and personal freedom. I had the opportunity to visit East Berlin while I was there, and I found it as different from West Berlin as a black-and-white image is different from a color photograph.

One rainy night Brother Berndt took me out for a tour of West Berlin. As we traveled along the wall that separated philosophies, governments, and families, he pointed out that there were places with white crosses painted on the Wall or adjacent to it. He explained to me that these crosses represented memorials to those who had lost their lives as they tried to escape the captivity of East Berlin into free West Berlin.

As we drove along I asked Brother Berndt if he thought the Wall would ever come down.

Now, to appreciate his answer, you have to understand who Brother Berndt was in terms of his background. Here was a man who had

his feet in both church and university circles; he was educated in both spiritual and secular things. If anyone might give a valid prediction of the Wall's future, it was Brother Berndt.

Now to his answer to my question about the Wall coming down: he turned to me and stated, "No, it can't come down." He went on to explain that economically it made no sense and that it just couldn't occur because the governments would not allow it to do so.

Well, for those of you who are not familiar with the rest of the story of the Wall, some eight to twelve weeks after my conference concluded, I was back home in Virginia glued to our TV, watching as the dismantling of the Berlin Wall was taking place. Thus the wall that could never come down was being taken apart before my eyes! I believe that this happened because the Lord was ready for it to come down to further His purposes.

What is the lesson that this experience taught me? Events can and do occur in our lives that are unexpected and, often, on a timetable that is not our own. Whether different than expected or faster or slower than anticipated, the Lord works on His own time schedule and in His own way.

In the case of the Berlin Wall, there was not a hint of its coming down when I was there—not even to a leader in the Church with years of education and experience in the secular world.

It is important to note in the case of the Berlin Wall that the time frame of its coming down was much more rapid than anyone might have conceived.

In contrast, there are many instances when the Lord's time schedule is much longer than what we might predict or desire. I think this latter situation is reflected in the phrase "learning to wait upon the Lord."

I have experienced, as I suspect you have, prayers to which answers seem to be long in coming. Nevertheless, my experiences in life have taught me with assurance that the answers do and will come.

The Lesson of the Savior's Power to Heal

The third lesson that I have learned through my experiences in life's laboratory is one that gives me constant hope. It has been taught to me through my own experiences and through the experiences of others. It is tightly linked to the other two lessons that I have shared.

This third lesson is that the healing power of the Savior is real and that it can touch our lives.

The all-encompassing nature of the Savior's power to heal is taught in many places within the scriptures. One of my favorite places is in the Book of Mormon in 1 Nephi, when Nephi saw the vision of the tree of life and was shown the life, mission, and sacrifice of the Son of God. Let me read from 1 Nephi 11:31:

I looked, and I beheld the Lamb of God going forth among the children of men. And I beheld multitudes of people who were sick, and who were afflicted with all manner of diseases, and with devils and unclean spirits. . . . And they were healed by the power of the Lamb of God; and the devils and the unclean spirits were cast out.

As I have pondered this scripture, I have marveled at the Savior's love and His efforts to heal us.

I am first struck with the observation that the Savior was not distant from those whom He healed. In point of fact, He was "among" them. His healing act was personal. I am amazed that among all the creations so extensive that they cannot be numbered by man, the Lord knows us as individuals.

The second message that this scripture brings to my mind is the depth and variety of challenges and problems that the Savior dealt with. It appears to me from my reading of this scripture that His healing capacity was not limited to healing physical illness, as those who came to the Him had "all manner of disease," which sounds all-encompassing.

This scripture, when coupled with life's experiences, teaches me that He can heal even the maladies of our souls.

As I consider my life, there are times when I am in need of that healing that comes only from Him. Perhaps you, too, have felt this need in your lives.

Because I have felt His healing power in my life and in my family's lives, I have learned that He who is our Savior is the friend of the comfortless and of those who are having problems—whether they are problems with classes, with dating, or with any of the other significant challenges that specifically trouble you and trouble me.

The Silver Lining

The message that I have endeavored to share today is that life's experiential laboratory has been a wonderful teacher. The learning process for me has not been easy—just as I suspect it has not been for you. Three important lessons that I have learned in life's laboratory are:

1. That prayer is real and that the Lord is not only accessible to us but He is a God of miracles. I have come to know through the experiences of my life that He is interested in us and what is important in our lives.

2. That the timetable of the Lord is different than our own and that it can be either quicker or slower than what we might expect. This observation leads me to understand that we must learn to "wait upon the Lord."

3. And, finally, the Lord knows us as individuals, and He can lift us and heal us.

Now, just as I began this talk with a science experiment, I would like to end it with one. This experiment illustrates the most important lesson I have learned in my life.

Let me describe to you what you are about to see. I will preface this description with the suggestion that what you will see is, in my view, a metaphor of the testing that goes on in life's laboratory.

You will see two colorless liquids mixed together. I would like you to pay careful attention to what you then see. Look for three color changes to occur: change 1, from clear to dark; change 2, from dark to a muddy but lighter brown; and change 3, from muddy brown to, well, let's watch and see.

[A video of a science experiment was shown; more.byu.edu/burton3.] Two colorless liquids are mixed together. Look for the color changes. You can see the darkness coming in. Then it begins to lighten. And at last we have a beautiful silver lining to the vessel. [Video ends.]

What do these stages of this reaction suggest to me?

1. The mixture started out as clear—much as our lives do when everything is going well.

2. It then became very dark—almost black—similar to the storms that come into our lives. These storms may consist of low exam scores, personal relationship problems, failure to meet a goal, or feeling all alone with great personal struggles.

3. The dark then lightened and became a muddy brown color—similar to the storms passing and things seeming a bit better; yet we continue, perhaps, to still feel confused or be in need of further help.

4. Lastly, the brown color gave way to shining silver—the "silver lining" at the end of the trials.

It is important to note that the silver lining comes when we gain understanding and the Savior's influence and love enter our lives. You'll note that this didn't occur until after the dark period had already transpired.

In a beautiful scripture in the book of Revelation, the Savior referred to Himself as "the bright and morning star" (22:16). Elder Jeffrey R. Holland once taught that after the "long night of darkness" comes the morning and "the bright and morning star," or the influence, love, power, and peace of the Savior (from the Saturday evening session of

a stake conference in the Orem, Utah, Cascade Stake, 2007). It is this influence in our lives that is the quiet after the storm and the peace that exceeds all understanding. He is the silver lining to our lives. He is the Bright and Morning Star.

The experiences of my life, a few of which I have shared today, logically teach me of a loving Heavenly Father and Savior who are vitally interested in us.

However, and far more important than logic, is the witness of the Holy Ghost that allows me to testify that we have a living Heavenly Father who loves us and is vitally interested in and concerned about us.

Furthermore, His divine Son, Jesus Christ, is our Savior, and through His atoning sacrifice we can be lifted, healed, and redeemed.

I bear witness of these things and the ultimate peace, light, and life that come from the Savior, in the name of Jesus Christ, amen.