

All levels of government need to understand why science matters

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OPINION

The dismissal of Ontario's chief scientist and elimination of the Ministry of Research, Innovation and Science sends unfortunate signals that science doesn't matter. But where will high-paying jobs and future economic prosperity come from? You guessed it — innovation driven by science.

The life-sciences sector in Ontario is bigger than the automotive sector, and both are science-driven and major drivers of our economy. The research done in Ontario's universities, hospital-based research institutes and in growing industries, such as biotechnology and artificial intelligence, lead to medical treatments and exciting innovations such as self-driving cars.

Our highly trained university and college graduates are helping to drive these innovations and the economic development that follows. These graduates are the critical thinkers, problem solvers and innovators that we need moving into an increasingly high-tech future.

As summer thunderstorms roll across our province, volcanoes erupt around the world and earthquakes violently shake the ground, we are amazed by the powerful forces of nature. Earth runs through a natural cooling and warming cycle every 100,000 years or so. Right now, the Earth is in a warming cycle. Human activities, particularly burning fossil fuels, have increased carbon dioxide levels to record levels beyond Earth's natural greenhouse effect. We should be humbled and cautious as we realize that humans are disturbing those forces.

When science gives us devices such as computers and cellphones, the internet and better medical treatments, we love it. But when science tells us that sugary drinks, high-fat diets, smoking cigarettes and burning fossil fuels are bad for us, we resist.

Everybody is a scientist. Humans are born curious. A science education system that emphasizes exploration and critical analysis rather than memorizing facts is key to developing a society engaged with science.

The process of science is complicated and can be difficult to understand. Three hundred years after Newton, physicists still do not fully understand the force of gravity. Yet, we know gravity exists. And 150 years after Darwin, biologists

are still working out the details of evolution. Yet, the evidence in support of evolution is strong and incontrovertible.

The causes of conditions such as autism are under intense study. The claim that vaccination and autism are connected has been shown to be fraudulent. Yet some, supported by celebrity opinion, still believe this to be true. At one time, people believed that the Earth was the centre of the universe and that it was flat (Members of the Flat Earth Society still do!), but science has shown that Earth is a beautiful blue planet that revolves around the Sun.

Science can be hard — ask one of our colleagues about the mountain of evidence needed to publish a paper in a top journal today. But science is not a matter of opinion. There can be debate about interpretation of data, and sometimes scientists have differing views. The process of science ensures that, eventually, good science and truth win. Fraudulent science is weeded out and fraudulent scientists are called out. There is no room for "Fake News" in science, or anywhere for that matter.

Organizations such as the Royal Canadian Institute for Science (RCIScience), created by Sir Sanford Fleming in 1849 with a Royal Charter dating to Queen Victoria, have a mission to bring science to the public.

RCIScience does this by giving the public the opportunity to engage with scientists through talks, panel discussions on topics, such as concussions, PTSD and the legalization of marijuana and conversations around a dinner table. The goal is to provide access to the scientific process, so the public has a stronger understanding of what science is telling us, what the questions are, why they are important and how they are addressed. This is the basis of a society that is engaged with science.

Science matters and needs to be supported by our elected representatives at all levels of government if we are to move forward using evidence-based decision making. Science has made and will continue to make our lives better. An informed public that embraces science builds a stronger Canada.

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