Testimony of Barry W. Larman, J.D., Ph.D.

Before the JOINT STANDING COMMITTEE ON HEALTH AND HUMAN SERVICES (May 4, 2021)

In Support of LD 1601:
"Resolve, To Establish an Advisory Panel to Study the Implications of Genome-editing Technology for the Citizens of the State"

Senator Claxton, Representative Meyer and other members of the Committee, it is an honor to appear before you today to speak in favor of LD 1601.

My name is Barry Larman and I live in Portland. While I hold a Ph.D. in Biochemistry and Molecular Biology, I am not speaking here today as an expert. I have been retired for a decade and am speaking solely as an interested citizen who has been following developments in genetic engineering over the last several years.

I believe that the Advisory Panel proposed by LD 1601 could not come at a more appropriate time.

I want to begin by briefly referring to three significant developments in Genome-editing technology that have occurred just in the last few months.

First. About a month ago, the trial of a new gene therapy for sickle cell disease was approved by the Food and Drug Administration. Work began on this therapy using the genetic manipulation technology of CRISPR over six years ago. This is the **first** CRISPR- based therapy to be approved in the United States. It may prove to be a truly groundbreaking advance.

Second. Only a few days ago, the first of millions of genetically engineered mosquitoes were released in the Florida Keys with the goal of substantially eliminating the species of mosquito that is responsible for spreading Dengue Fever and Zika Virus. The first version of this transgenic mosquito was developed almost two decades ago. This is the **first** genetically modified mosquito to be released into the wild in the United States.

Third. The Food and Drug Administration has recently approved the human consumption of Atlantic salmon that has been genetically engineered to grow almost twice as fast as its wild type cousins. This transgenic salmon was first developed in 1989, more than thirty years ago. It is the **first** genetically modified animal to be approved for human consumption in this country.

The genetic modification of living things using recombinant DNA technology has been going on for a long time. Often, the development time is lengthy. Certainly, the process of gaining the required approvals from government agencies is extensive and time consuming. As a consequence, the pipeline of genetically modified organisms and gene therapies is extensive. These ground-breaking products will be appearing at an increasingly rapid rate – especially now that the scientists are harnessing the incredible genome editing power of CRISPR. As was

stated in awarding the 2020 Nobel Prize for the discovery of CRISPR, the modification of genes "used to be time-consuming, difficult and sometimes impossible work. Using the CRISPR/Cas9 genetic scissors, **it is now possible to change the code of life over the course of a few weeks**."

And CRISPR is not the end of the story. It is likely only be the beginning of a new revolution in genetic manipulation. The power that scientists possess to modify the genome of every living thing will only grow in time.

I believe there is great wisdom behind what LD 1601 seeks to accomplish. We must prepare ourselves with the intellectual and ethical frameworks to ask the right questions, to comprehensively address the choices and adopt the best policies regarding the increasingly rapid development of the genetic manipulations with which we will be faced. We will be confronted with truly profound applications of this technology. We will be confronted with increasing difficult ethical issues. And all this will come at us with an increasing velocity.

I believe that the adoption of LD 1601 will help us prepare for the tsunami of the genetic innovation, only the first small waves of which we are now witnessing.

I would be happy to answer any questions you may have.