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My name is Margaret Rubega, and I am an associate professor in the department of Ecology and Evolutionary Biology at UConn. I am also the State Ornithologist. I'm here today to talk to you about how investment in the kind of basic science research my colleagues and I do pays off. By "basic" I mean research that is aimed at understanding how the world works, without obvious immediate application to technology or practical problems. The people in my department study things like seaweed; venomous lizards, and the way that birds feed. It might not be obvious where the economic value is in such things, but history shows that INNOVATION comes, by definition, from unexpected quarters.

For instance, my colleague, Charles Yarish, is a marine ecologist who began studying seaweeds just to understand their biology. He had no business plan, no problem he was trying to solve. He was just sure that seaweed were important in the ocean, and interesting. After years of research, he knew enough about seaweeds to show that they are great at taking the kind of nutrients out of water that we identify as pollution --- for example, the runoff from fertilizer – and using them to grow on. Seaweed is a valuable commodity – one species, called *Gracilaria*, is the source of a substance called agar, which is widely used in biotechnology, and in many foods and cosmetics. The trade in that one kind of seaweed has an annual value of about $540 million. So now Charlie is working with colleagues in our Business School to solve a problem – water pollution --- by creating a new economy centered on seaweed cultivation and harvest in Long Island Sound. They estimate that the value of that one seaweed to the local economy could be as much as about 47 million dollars annually.

That story I just told you is not a well-chosen fluke: it's the way NEW economic value arises; it's the way it has always arisen. A well-prepared mind gets the chance to make a connection, and new things get made. A marine biologist sees a jellyfish that glows green, wonders why, and the outcome is that every biomedical researcher on the planet now uses glowing jellyfish protein to label cell lines, and to generate billions annually in economic value. Questions we didn't need answers to last week arise. I study body form in birds; when an engineer from Sikorsky calls me to find out how dense the material is that a jet engine has to chop up to avoid failing if a bird gets sucked into it, I can tell him.

There's no question that existing opportunities and problems should be pursued in a directed way. What's easier to overlook is the importance of continuing to fuel innovation by supporting basic STEM research. I urge you to think of Next Generation Connecticut as not only an investment in science and technology that

you can see will be profitable for the state, but in innovations that you can't even yet dream of. Thank you.