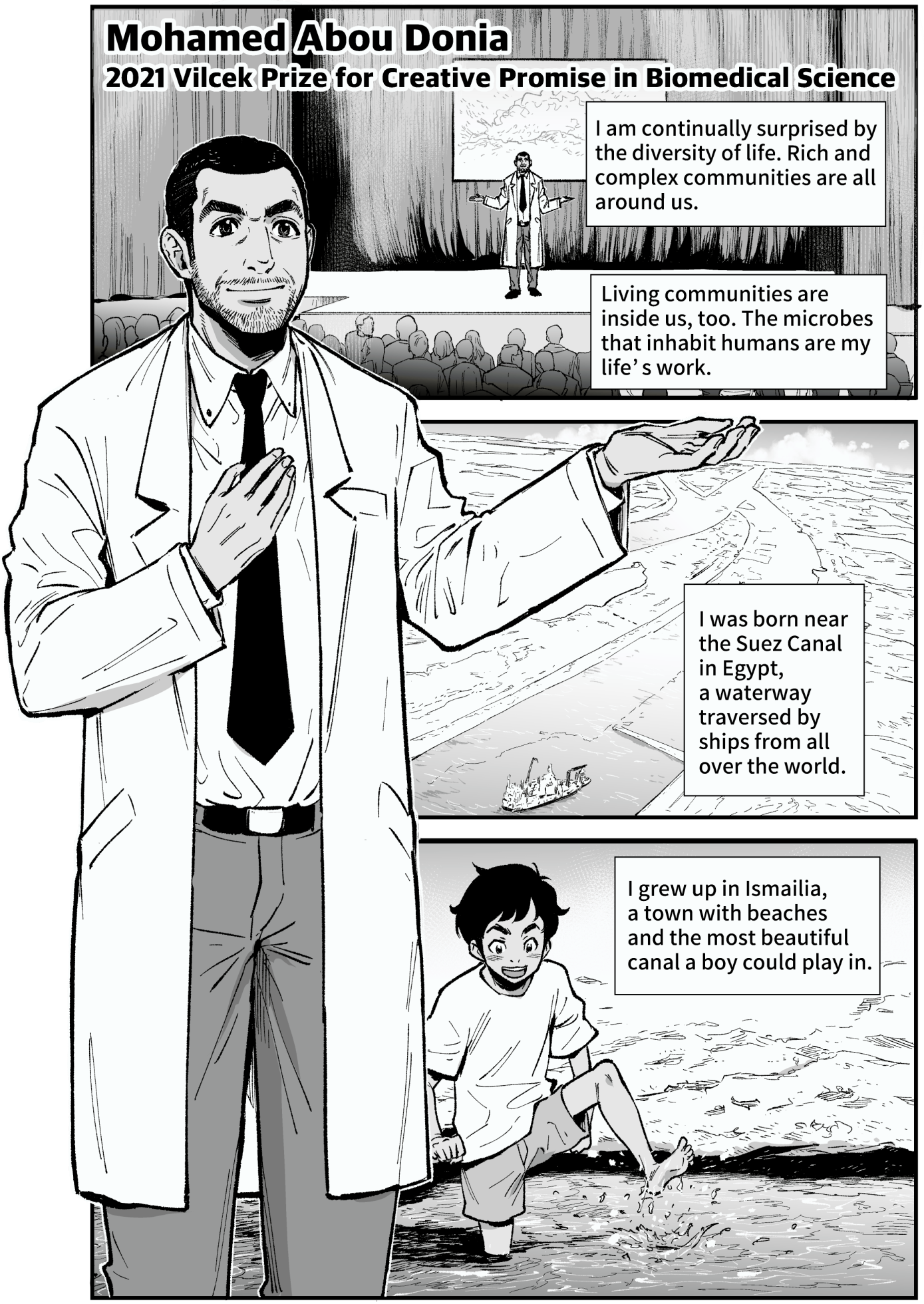
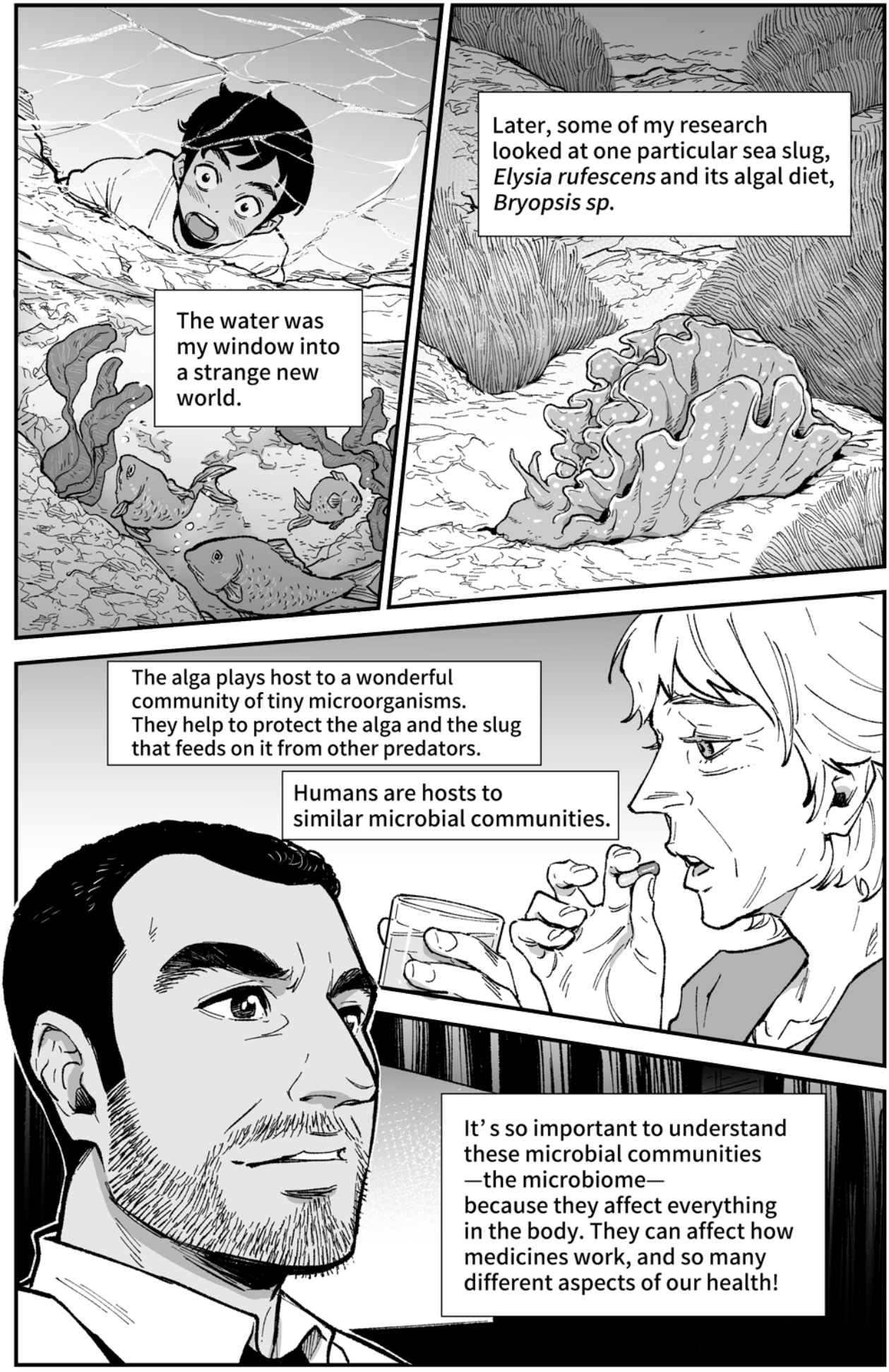
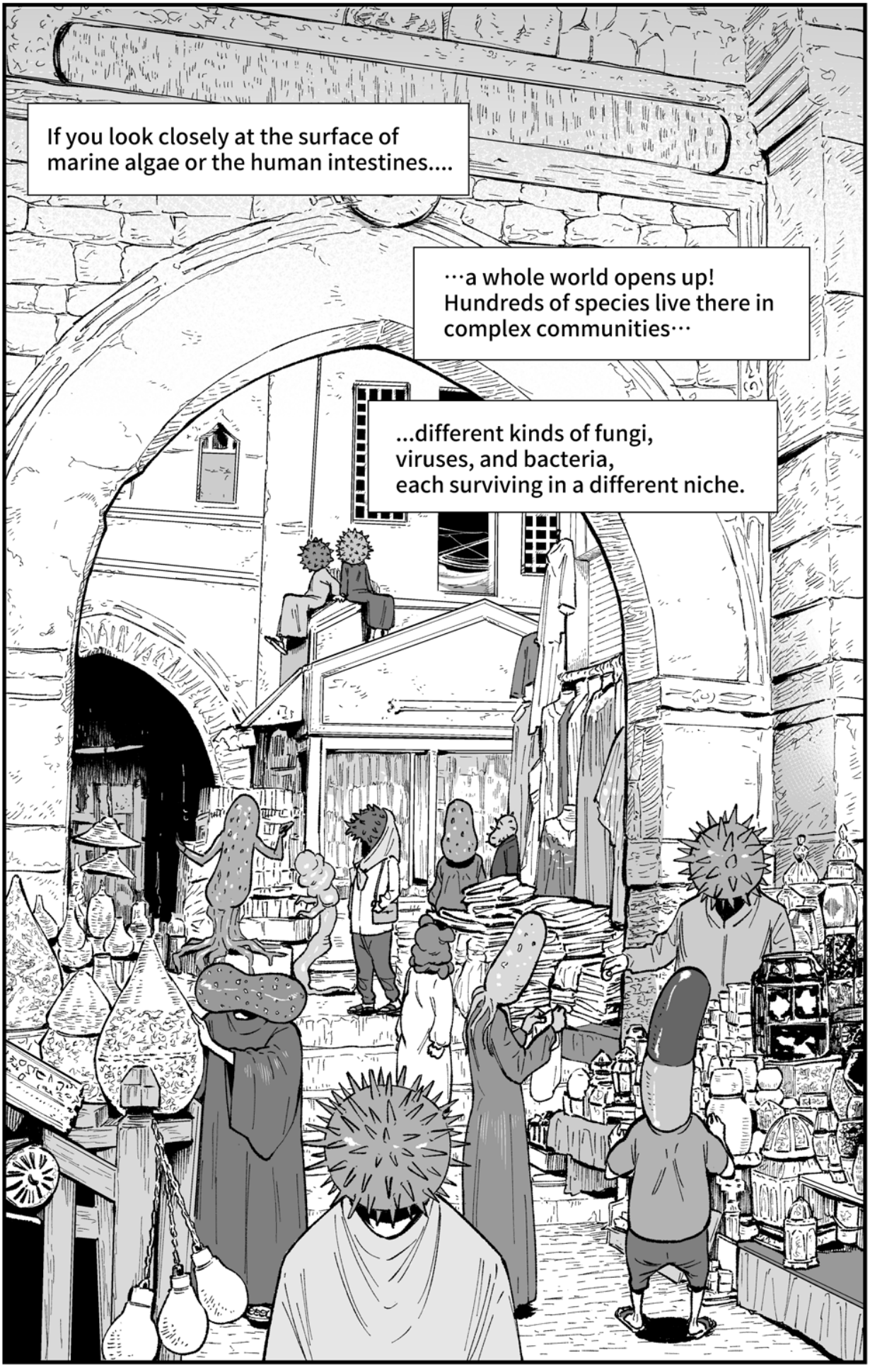
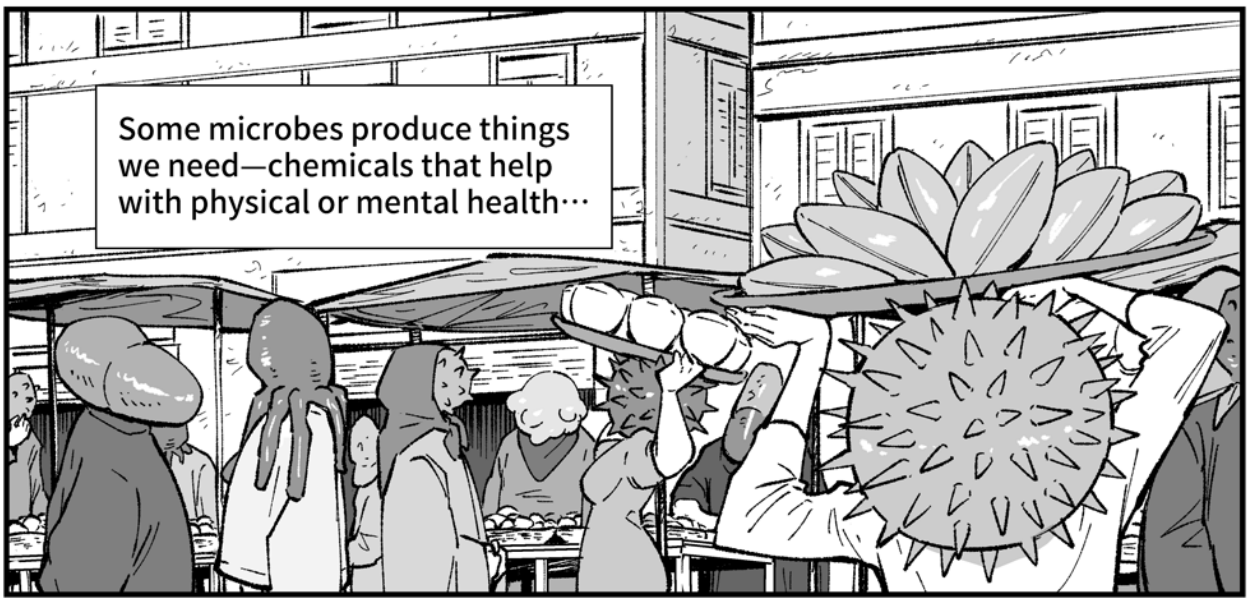
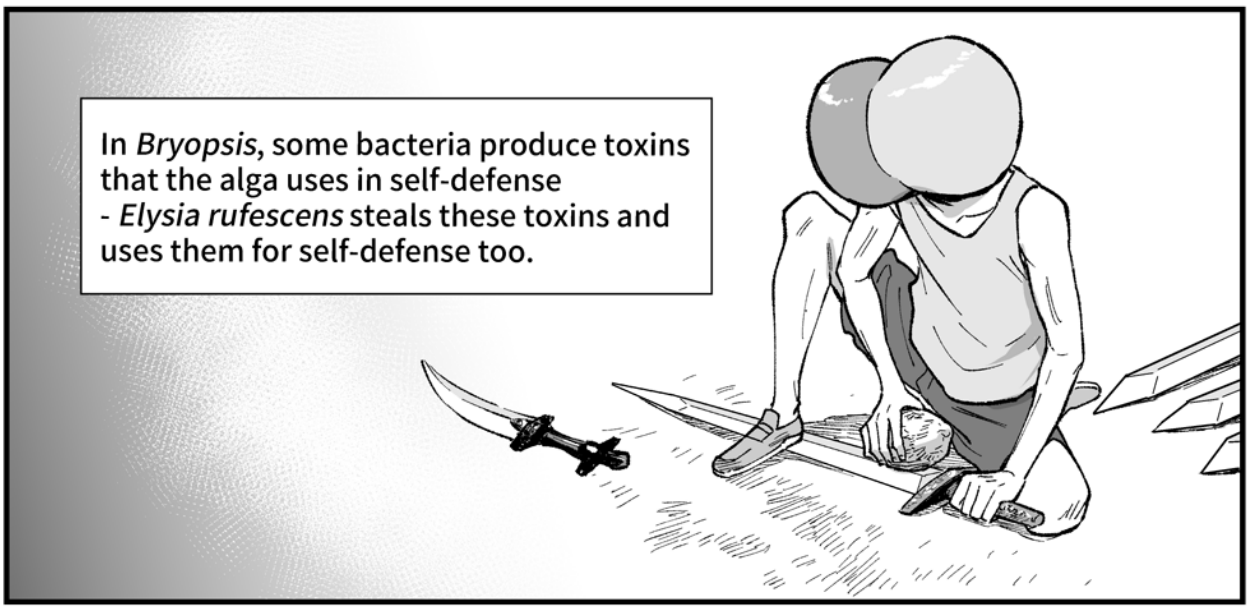

Mohamed Abou Donia
2021 Vilcek Prize for Creative Promise in Biomedical Science
I am continually surprised by the diversity of life. Rich and complex communities are all around us.
Living communities are inside us, too. The microbes that inhabit humans are my life's work.
I was born near the Suez Canal in Egypt, a waterway traversed by ships from all over the world.
I grew up in Ismailia, a town with beaches and the most beautiful canal a boy could play in.


The water was my window into a strange new world.
Later, some of my research looked at one particular sea slug, *Elysia rufescens* and its algal diet, *Bryopsis sp.*
The alga plays host to a wonderful community of tiny microorganisms. They help to protect the alga and the slug that feeds on it from other predators.
Humans are hosts to similar microbial communities.
It’ s so important to understand these microbial communities —the microbiome— because they affect everything in the body. They can affect how medicines work, and so many different aspects of our health!


If you look closely at the surface of marine algae or the human intestines....
…a whole world opens up! Hundreds of species live there in complex communities…
...different kinds of fungi, viruses, and bacteria, each surviving in a different niche.


Some microbes produce things we need—chemicals that help with physical or mental health…


...some are scoundrels that steal medicines or nutrients, or even produce harmful chemicals that can cause diseases.


In *Bryopsis*, some bacteria produce toxins that the alga uses in self-defense - *Elysia rufescens* steals these toxins and uses them for self-defense too.


In my Princeton lab
we are pioneering new ways
to study the microbiome.
We are a diverse community, too.
Our scientists come from all over
the world.
We observe how the microbiome
interacts with the human body
and how it metabolizes medications.
The next generation of life-saving
treatments or medicines could be
coming from our own microbiome.
The Vilcek Foundation Prize
recognizes how diversity enriches
our society.
Receiving the prize for my work on
organisms and their microbiomes
is a reminder of how diverse
communities work together to
accomplish extraordinary things.