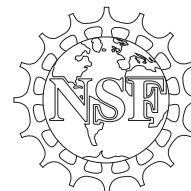
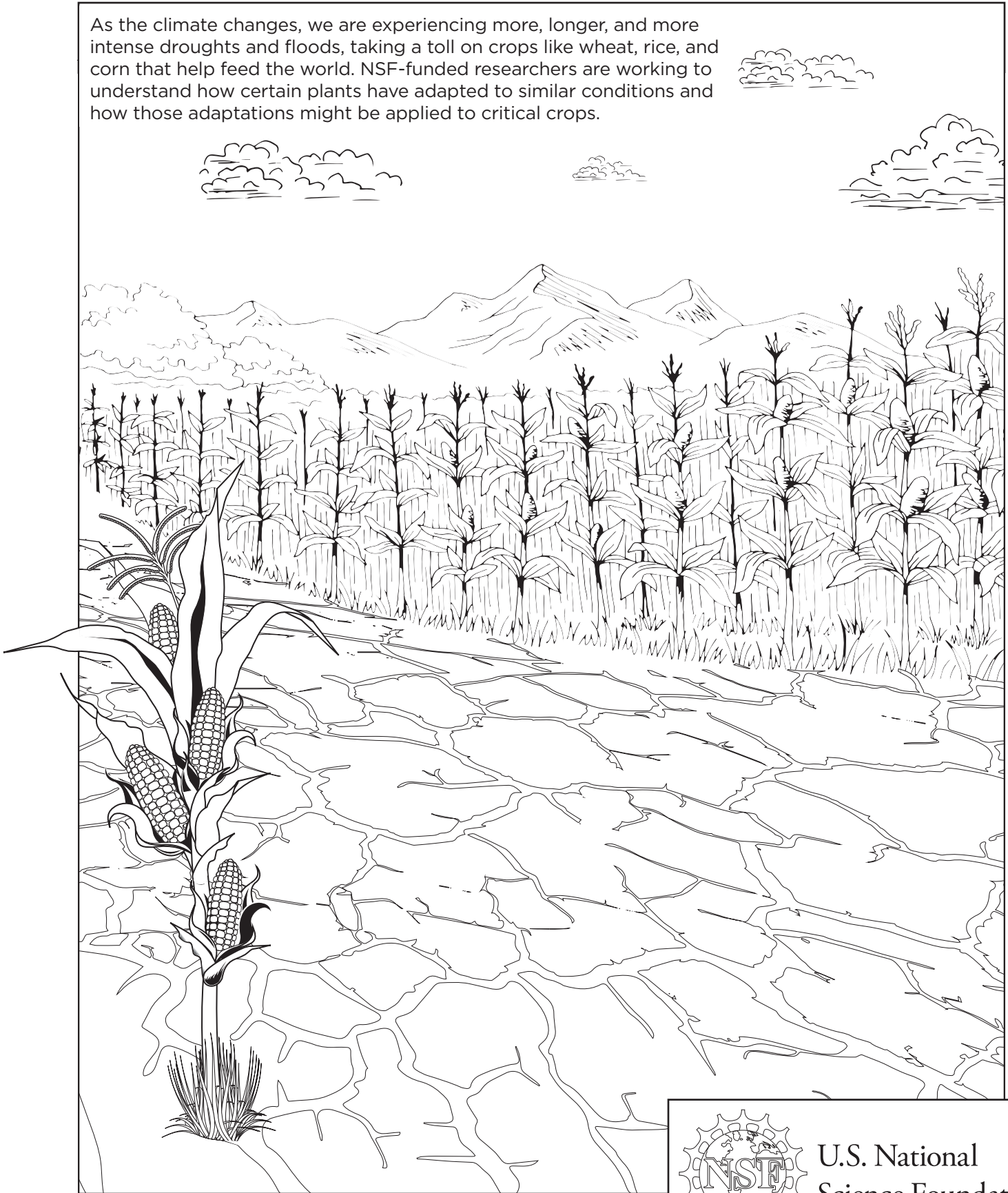


# CLIMATE CHANGE ENHANCING CROP RESISTANCE

— BIOLOGICAL SCIENCES —

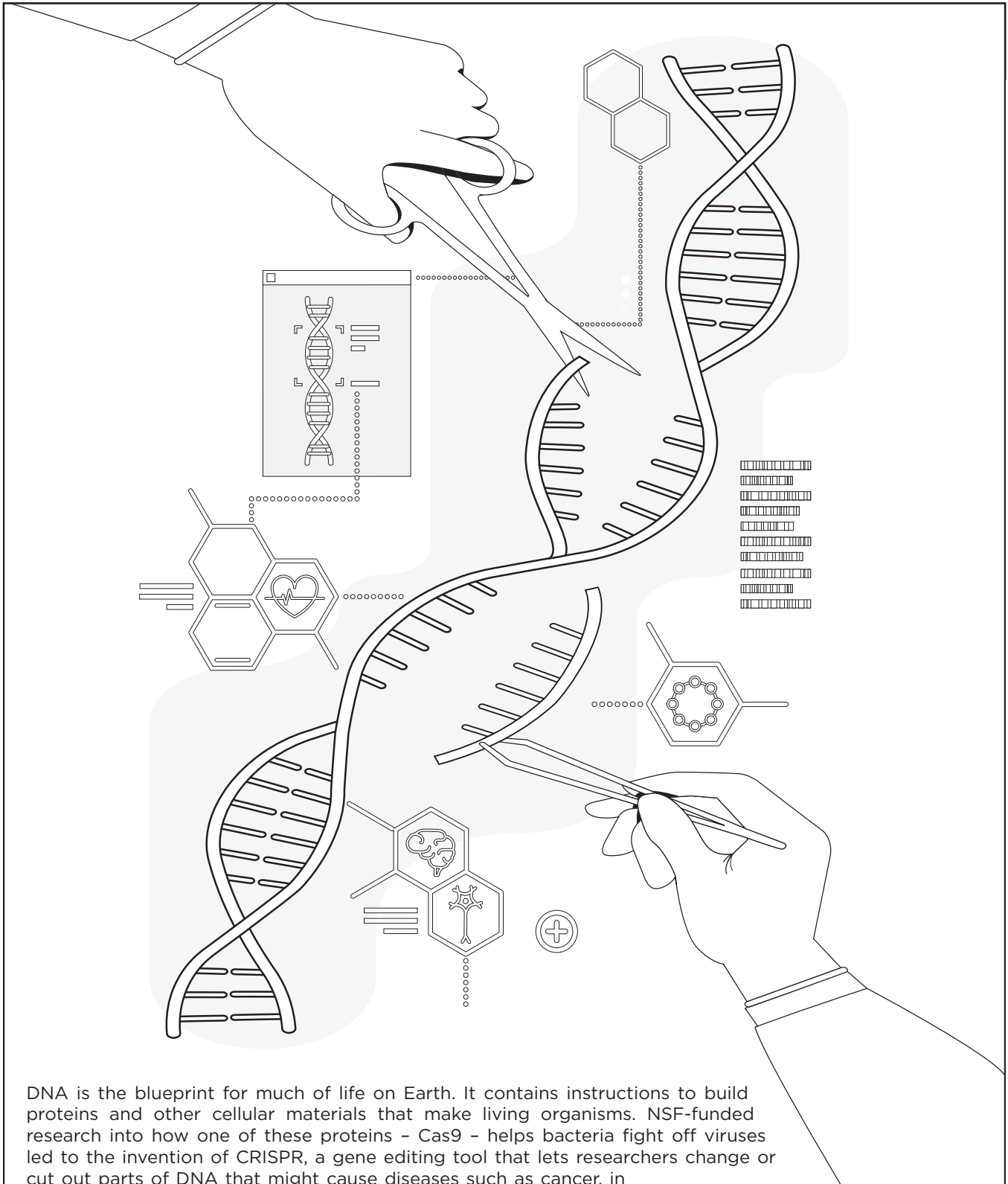
As the climate changes, we are experiencing more, longer, and more intense droughts and floods, taking a toll on crops like wheat, rice, and corn that help feed the world. NSF-funded researchers are working to understand how certain plants have adapted to similar conditions and how those adaptations might be applied to critical crops.



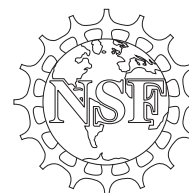
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# C.R.I.S.P.R. ADVANCES IN GENETICS

— BIOLOGICAL SCIENCES —



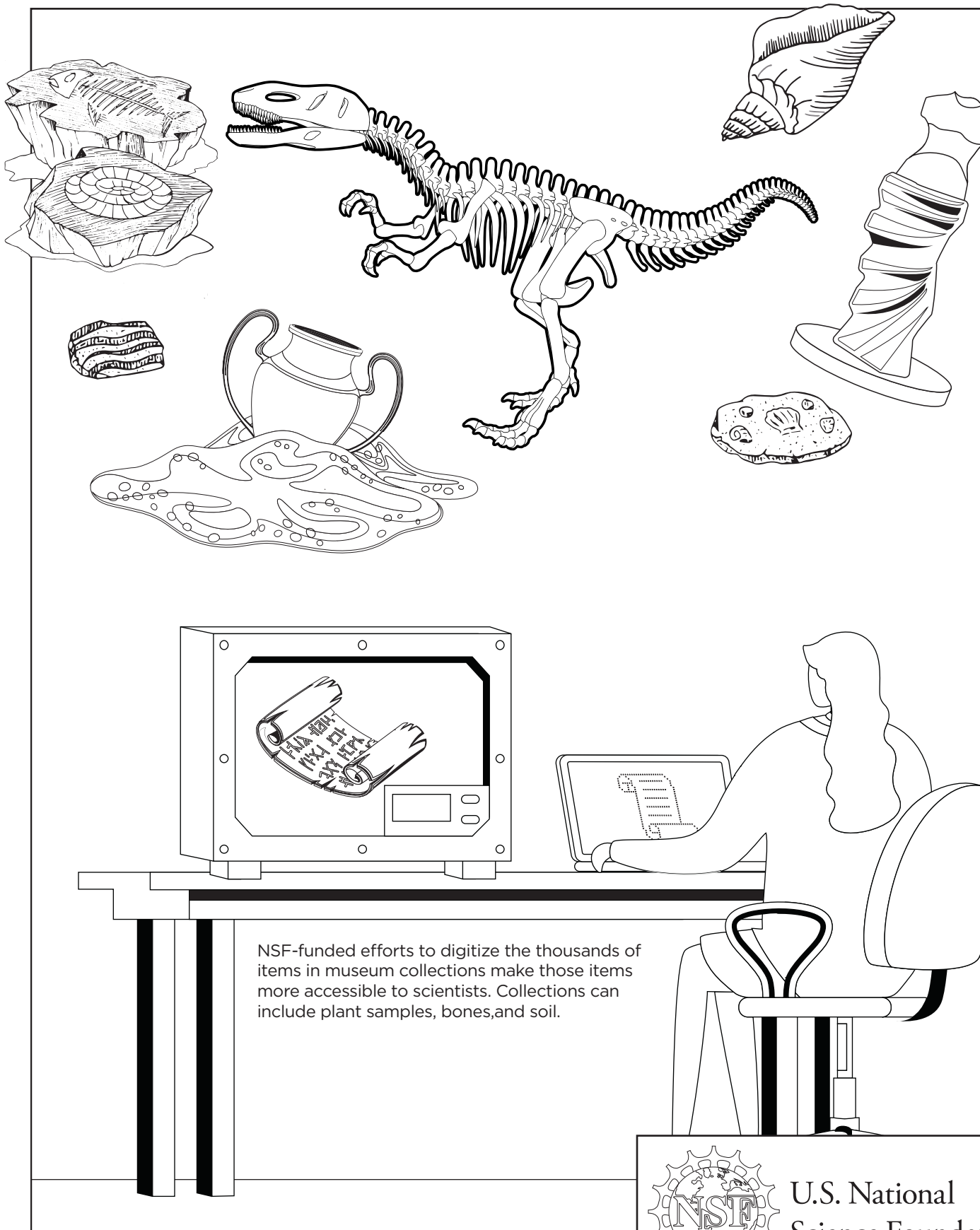
DNA is the blueprint for much of life on Earth. It contains instructions to build proteins and other cellular materials that make living organisms. NSF-funded research into how one of these proteins - Cas9 - helps bacteria fight off viruses led to the invention of CRISPR, a gene editing tool that lets researchers change or cut out parts of DNA that might cause diseases such as cancer, in order to find new cures. Jennifer Doudna, who was funded by NSF, shared in the Nobel Prize in Chemistry in 2020 for her research on CRISPR-Cas9.



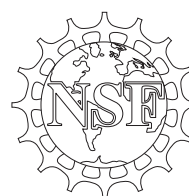
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# MAKING MUSEUM COLLECTIONS DIGITAL

— BIOLOGICAL SCIENCES —



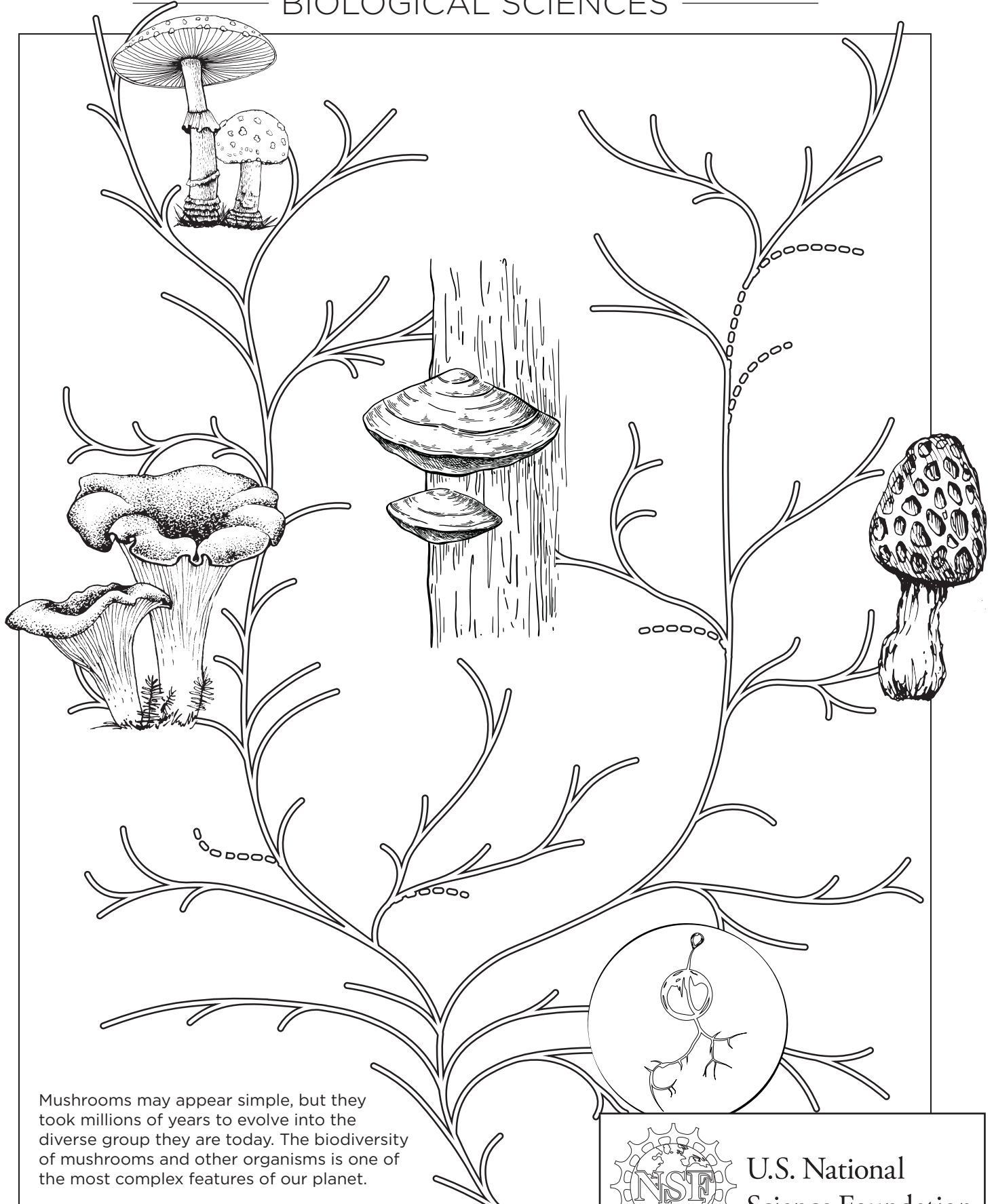
NSF-funded efforts to digitize the thousands of items in museum collections make those items more accessible to scientists. Collections can include plant samples, bones, and soil.



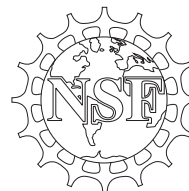
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# FUNGAL TREE OF LIFE

BIOLOGICAL SCIENCES



Mushrooms may appear simple, but they took millions of years to evolve into the diverse group they are today. The biodiversity of mushrooms and other organisms is one of the most complex features of our planet.

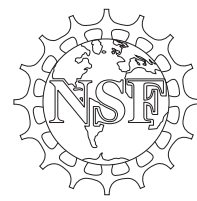
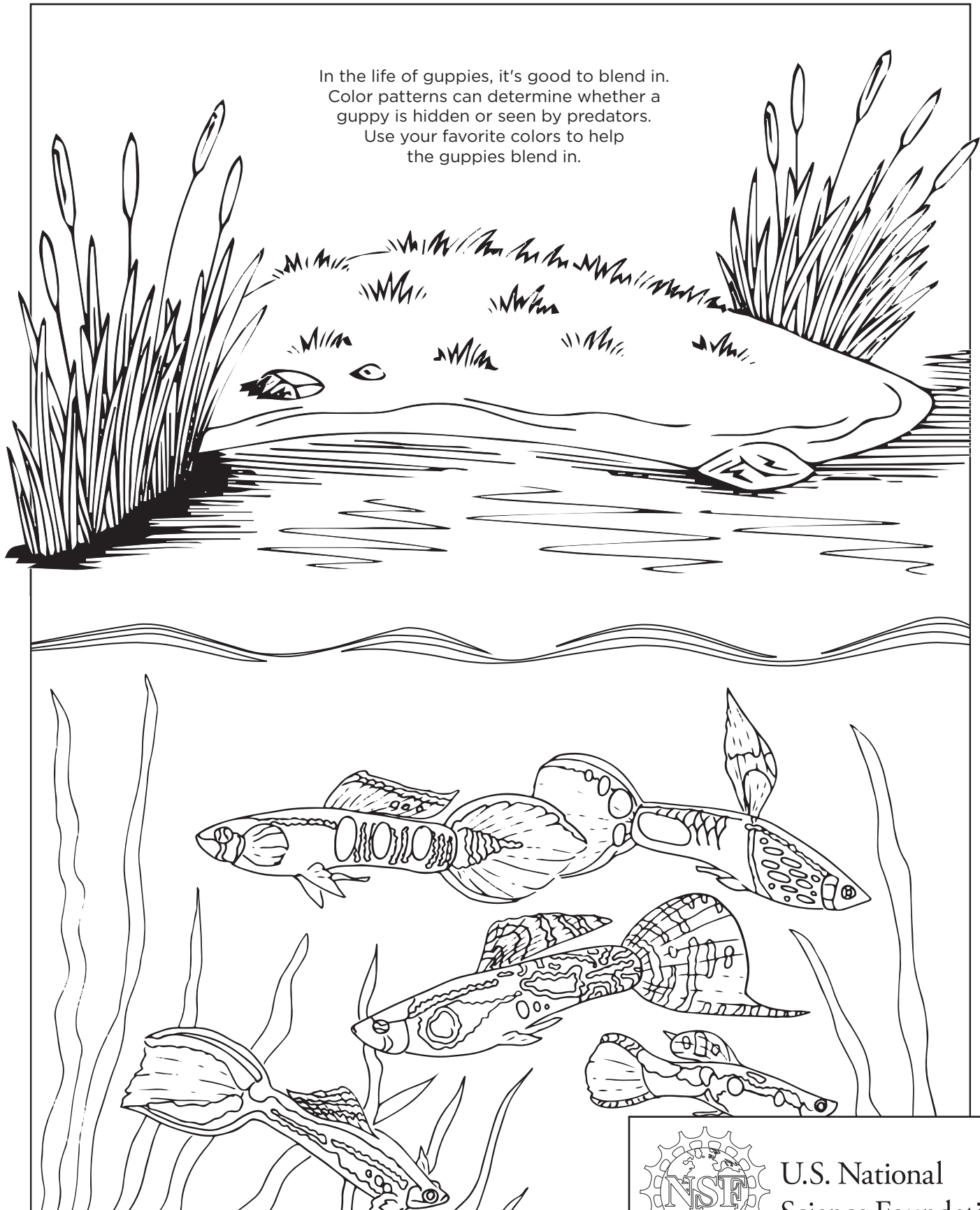


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# WILD GUPPY COLOR PATTERNS

— BIOLOGICAL SCIENCES —

In the life of guppies, it's good to blend in.  
Color patterns can determine whether a  
guppy is hidden or seen by predators.  
Use your favorite colors to help  
the guppies blend in.

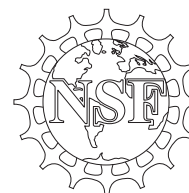


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# CITY ECOSYSTEMS

## — BIOLOGICAL SCIENCES —

Cities can be beneficial for wildlife and humans! Wildflowers in parks or window boxes are pretty and can provide pollinators with a food source. As pollinators drink nectar or feed on pollen from each flower, they help the plants reproduce. This leads to more flowers, fruits, and crops.

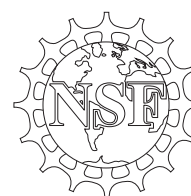
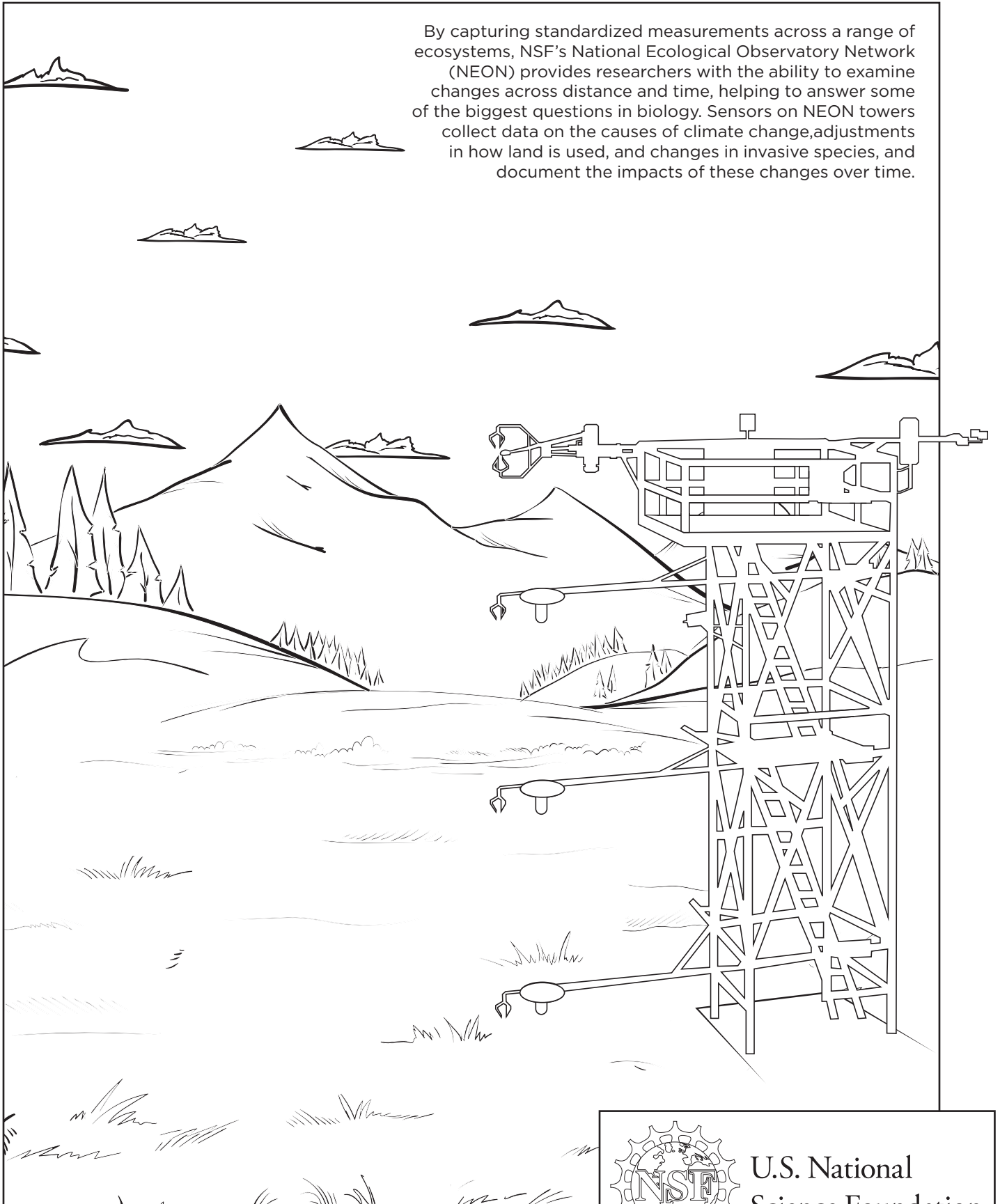


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# NEON MONITORING SITE

— BIOLOGICAL SCIENCES —

By capturing standardized measurements across a range of ecosystems, NSF's National Ecological Observatory Network (NEON) provides researchers with the ability to examine changes across distance and time, helping to answer some of the biggest questions in biology. Sensors on NEON towers collect data on the causes of climate change, adjustments in how land is used, and changes in invasive species, and document the impacts of these changes over time.

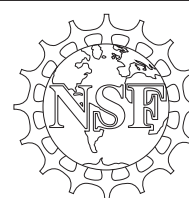
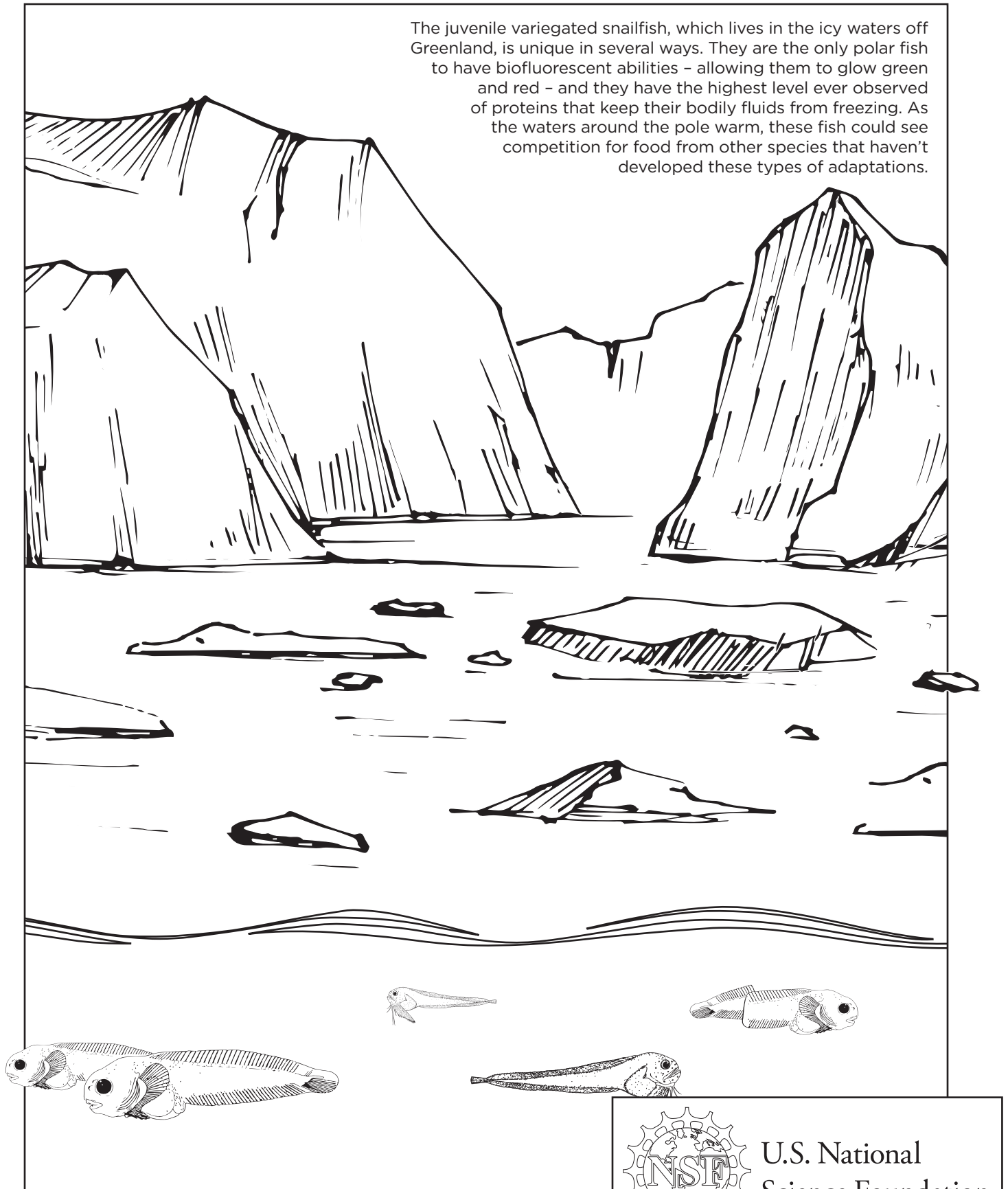


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# ADAPTING TO HARSH ENVIRONMENTS VARIEGATED SNAILFISH

— BIOLOGICAL SCIENCES —

The juvenile variegated snailfish, which lives in the icy waters off Greenland, is unique in several ways. They are the only polar fish to have biofluorescent abilities - allowing them to glow green and red - and they have the highest level ever observed of proteins that keep their bodily fluids from freezing. As the waters around the pole warm, these fish could see competition for food from other species that haven't developed these types of adaptations.



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