

# Smithsonian launches major new initiative to better understand life on Earth

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Scientists across the Smithsonian have studied genomics for years, investigating how animal and plant species function, relate to one another, adapt to change and thrive or fail to survive. Genomics also play a key role in their research of climate change, disease and biodiversity conservation. The Smithsonian is now uniting these efforts and creating a plan for transformative future research with the establishment of the Smithsonian Institute for Biodiversity Genomics.

The field of biodiversity genomics uses entire DNA sequences of organisms coupled with complex analyses of biological data to advance the understanding of life on Earth. This new initiative will enable the Smithsonian, the world's largest museum and research complex, to leverage its hundreds of scientists and trainees, vast collections, global networks and facilities to pursue a coordinated, powerful vision. Through this unified effort, the Smithsonian will pioneer bold science that transforms the study of biodiversity to offer a more complete understanding of what patterns of genomic variation reveal about the past, present and future.

"The Smithsonian has made substantial investments in biodiversity research at our museums and with investigations around the globe, from the poles to the tropics, at field sites in more than 100 countries," said John Kress, Smithsonian's Interim Under Secretary for Science. "Over the last decade we have built the research, scholarship and scientific leadership required for this new initiative. With all the essential pieces now in place, it is the perfect time to launch this pan-institutional

effort."

Under one strategic vision, the Institute for Biodiversity Genomics will feature the Smithsonian's leading scientists, a network of global partners, the world's largest natural history collection—127 million specimens—molecular laboratories and biorepositories with millions of cryopreserved samples. With this framework Smithsonian scientists will be able to address key questions in evolutionary biology, phylogeny, ecology, conservation and ecosystem management.

The institute will build on the Smithsonian's unique assets and investments in biodiversity research to focus on four key areas:

- Diversity Genomics: What are the origins of life and how are species related across the globe?
- Evolutionary Genomics: How does the blueprint of life vary among individuals and species and what does this mean for their ability to adapt?
- Ecological Genomics: How do ecosystems work and what makes them resilient to change?
- Conservation Genomics: How do we sustain biodiversity and protect species and ecosystems?

"Our goal is to pioneer novel genomic approaches, integrate them into biological endeavors throughout the Smithsonian and serve as a resource for genomics research around the world," said Pierre Comizzoli, research biologist and Director of the Grand Challenges Consortia for Science at the Smithsonian. "The Institute for Biodiversity Genomics will be a platform to convene both the leading scientists in this emerging field as partners, as well as post-doctoral students and fellows for training and education."

One major project already underway that will be part of the Institute for

Biodiversity Genomics, is the Global Genome Initiative led by the Smithsonian's National Museum of Natural History. The Global Genome Initiative is a worldwide collaborative effort to strategically study and preserve the tree of life by building a global network of biorepositories and a genomic research infrastructure. Through its project goals and initiatives, GGI will expand the Smithsonian's contribution to the preservation and knowledge of life on our planet.

The GGI team led the development of the Global Genome Biodiversity Network, a consortium of 29 biorepositories in 17 countries that will build one global database of genomic biodiversity samples accessible to scientific institutions. GGI also created the GGI Knowledge Portal, the first ever database of all living families of life on Earth, which indexes key indicators of genomic, geographic and scientific knowledge.

The GGI will join several other projects at the Smithsonian to help establish the foundational infrastructure of the Institute for Biodiversity Genomics. Once the framework is firmly established, it is the goal for the Institute to advance and accelerate genomics research projects, build a cohort of [biodiversity](#) genomics fellows and expand outreach through multiple platforms, highlighting research, discoveries and impact.

Provided by Smithsonian

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