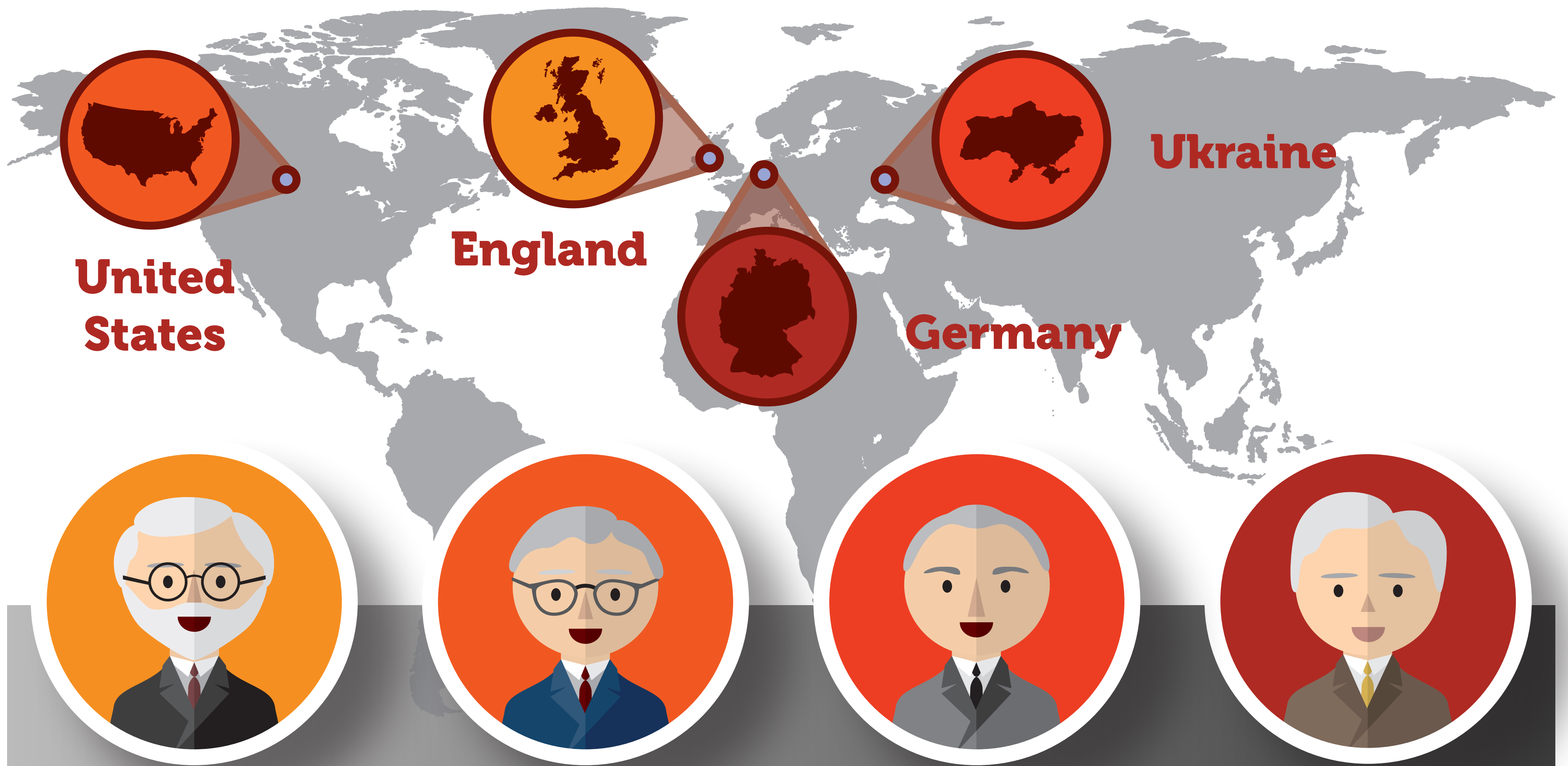


Evolution after Darwin

Many individuals **after Darwin** enriched the **Theory of Evolution** with their work



Ronald Fisher, Sewall Wright, Theodosius Dobzhansky, Ernst Mayr

The variations that Darwin saw in his pigeons and barnacles, whose origin he had not the faintest idea how to explain, emerge due to changes in DNA sequences. **Before 1920, the mechanisms that allow evolution to act were unknown. Genes, DNA, and mutations were unknown.** There were no explanations as to why there are differences between two populations of the same species. In the early 1920's, scientists began to realize that mutations had a great impact on evolution. **Ronald Fisher (1890-1962)**, an English statistician, and **Sewall Wright (1889-1988)**, an American geneticist, integrated natural selection and genetics, positioning Darwin's

theory on more solid foundations. Fisher demonstrated that natural selection progresses through the accumulation of small changes, as opposed to the idea of sudden dramatic variations. A significant step was the publication in 1937 of the book by **Theodosius Dobzhansky (1900-1975)**, a Soviet scientist who emigrated to the US, titled **Genetics and the Origin of Species**. Working with his naked eye and using a microscope, Dobzhansky was able to identify differences in chromosomes by studying diverse populations of fruit flies (*Drosophila*).



Ernst Mayr (1904-2005) was inspired by Dobzhansky's book and understood why the traits of the birds he studied in New Guinea varied from town to town: there was gene flow. By 1940, the architects of the new modern synthesis had shown that genetics, zoology, and paleontology, all told the same story. **Mutations were the foundation of evolutionary change. Those mutations, together with the laws of heredity, gene flow, natural selection**

and geographic isolation, could create new species and new forms of life. If all these changes worked for millions of years, it was possible that the transformations seen in the fossil record would appear. The success of this modern synthesis, also known as **Neo-Darwinism, has been the force that has transformed research in evolutionary biology since 1950.**