

The human journey

Lesson Map: <https://esriurl.com/enviroGeoInquiry14mv>

Engage

How did humans come to dominate the planet?

- Post Darwin's "On the Origin of Species," scientists worked to put organisms into classes. First attempts to organize humans sought continental similarities between people.
- Click the map URL above to open the map.
- Click the map notes near each of the continents.

- ? What traits could be used to differentiate people from different continents?
[Answers may include hair colour and texture, height, skin colour, and facial bone structure.]
- ? What has been happening to these distinctions over the past 200 years? *[Global migrations are increasing the variety of features seen in local populations but blurring regional patterns in traits.]*
- Click Layers on the dark toolbar.
- Turn off the layer Continental People Groups by pointing your mouse at it in the Layers pane and clicking the eye icon that appears.

Download student worksheet [here](#).

Time
40 minutes

Activity

Follow the path of human migration from Africa to the far reaches of the globe.

Learning Outcome

Students will be able to:

- Understand the use genetic factors, such as blood type or a simplified version of genetic markers.
- Explain where human characteristics originated.
- Incorporate all the patterns of migration related to the blood.

ACARA Curriculum Link

Year 8 History

[ACDSEH013](#)

Year 10 Science

[ACSHE191](#)

Humanities and Social Sciences
Unit 1 Senior Curriculum:
Investigating the Ancient World

[ACHAH007](#)

Humanities and Social Sciences
Unit 2 Senior Curriculum:
Ancient Societies

[ACHAH095](#)

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au

Explore

What do blood-type distributions tell us?

– Blood types, discovered in 1901, predict who can share blood without clotting and killing the recipient. Within 20 years, A, B, and O patterns were determined globally.

→ Turn three layers on and off as needed for the following questions:

Type O Blood Distribution, Type A Blood Distribution, Type B Blood Distribution.

? What blood type is most prevalent? *[O blood type]*

? Would this give evidence to which blood type was the founder and others the mutations? *[Not conclusively, but it supports a theory of Type O being the original blood type.]*

Explain

How did blood get us closer to the heart of the matter?

? What patterns occur in blood types? *[Type A is concentrated in Europe, B in Asia, and O in Americas.]*

? Where is Type A blood likely to be found? *[Europe, Australia, and northern Alaska/Canada.]*

? Could any of these areas be explained by recent historic migrations of A blood types moving in? *[Australia and the eastern/central U.S. could be a legacy of European blood types due to recent immigrations. Northern Canada could have possibly been influenced by arctic nomadic populations that also settled near Scandinavia.]*

Extend

Why do those living in the Americas have such similar blood types?

– Mitochondrial DNA mutates at rates higher than DNA from the cell nucleus. This leaves recognizable patterns in how long populations have been separated.

→ Turn on the two layers Human Migration from Africa and Austronesian Expansion.

? Does the blood type distribution of the Americas match where these populations originated? *[No, but a small set of related individuals from these areas might, as Type O is still the dominant blood type in Asia.]*

? What might explain why Native Americans have such an overwhelming prevalence of O blood types? *[The founder effect with a high percentage of O blood types; O populations in Europe, Asia, and Australia faced selective elimination due to disease allowing A and B types in Eurasia to become more prevalent.]*

What other blood types variations could be added to the map?

? What other old-world disease information can you find to look for spatial relationships to these blood types? *[O blood types have been shown to be more susceptible to diseases like Cholera, gut bacterial infections (E. coli or H. pylori in ulcers), malaria, the plague, or smallpox.]*

Next Steps:

Request a free ArcGIS Online Account for your school:

Australian schools can request a free ArcGIS Online account as part of Esri Australia's Classroom GIS Initiative. A school subscription provides additional map layers, content, features, and privacy.

Learn more about ArcGIS Online, and apply for your ArcGIS Online School subscription at <http://esriaustralia.com.au/education>