

ENVIRONMENTAL GENOMICS AND BIOINFORMATICS WITH DR GUILHERME OLIVEIRA

TALKING POINTS

KNOWLEDGE

1. Which countries does the Amazon span?
2. What is the percentage of Brazil that the Amazon rainforest covers? How many species are said to be located there?

COMPREHENSION

3. Why is it important to understand more about the Amazon and the biodiversity within it?

APPLICATION

4. For what reasons is it important that Guilherme and his team can quantify gene flow in the Amazon? How might it contribute to governmental policy in Brazil?

SYNTHESIS

5. How would you communicate the biodiversity of the Amazon to the general public? What methods do you think might be best to demonstrate the beauty of biodiversity – and the potential threats to it – in ways that can be easily and quickly understood?

EVALUATION

6. Guilherme talks about what a typical day looks like for him and his team. Of course, there are difficulties, but what do you make of his routine tasks? What would you enjoy about fieldwork? What would you enjoy about lab work?
7. Towards the end of 2021, there were reports of deforestation in Brazil's Amazon rainforest hitting its highest level in more than 15 years. How does this fact affect your opinion of Guilherme's research and the importance it has? On one hand, it is dismaying to learn about deforestation figures, but on the other, people like Guilherme are doing brilliant work. To what extent does this give you hope for the future?

ACTIVITY

Guilherme emphasises the importance of having a multidisciplinary approach to work. Imagine you are a researcher embarking on a project investigating biodiversity.

- Where would you like to focus your efforts, in an area near where you live or somewhere further afield?
- Will you focus on animals or plants?
- What would you like to know?

Now, consider the different disciplines that could aid this research. Can you add more to the table below?

| | What does this expert do? | With your research focus in mind, what questions would you ask this expert? | Why is this discipline important for your research project? |
|--------------------|---------------------------|---|---|
| Taxonomist | | | |
| Botanist | | | |
| Microbiologist | | | |
| Bioinformatician | | | |
| Genomicist | | | |
| Ecologist | | | |
| Mathematician | | | |
| Computer Scientist | | | |
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It will be useful to remind yourself of the different branches of science:

www.sciencemirror.com/branches-of-science-the-complete-list/

And different disciplines within biology:

www.wellnessbeam.org/the-14-types-of-biologists-and-what-exactly-they-investigate

MORE RESOURCES

Visit Guilherme's website to learn more about his work: www.oliveira.life

WWF: The World Wildlife Fund provides a range of information about the Amazon region: www.worldwildlife.org/places/amazon

It also highlights there is cause for hope: www.worldwildlife.org/magazine/issues/summer-2014/articles/the-amazon-region-protected-areas-program-is-the-single-largest-tropical-forest-conservation-program-in-history

GREENPEACE: This article from Greenpeace outlines for the biodiversity the Amazon rainforest is host to: www.greenpeace.org/usa/biodiversity-and-the-amazon-rainforest

YOUR GENOME: Yourgenome.org offers a wealth of information to help you find out more about the world of genomics: www.yourgenome.org

It also has activities focused on animals and plants:

www.yourgenome.org/topic/animals-and-plants

CABANA: Find out more about the CABANA programme, which strives to strengthen bioinformatics in Latin America: www.cabana.online