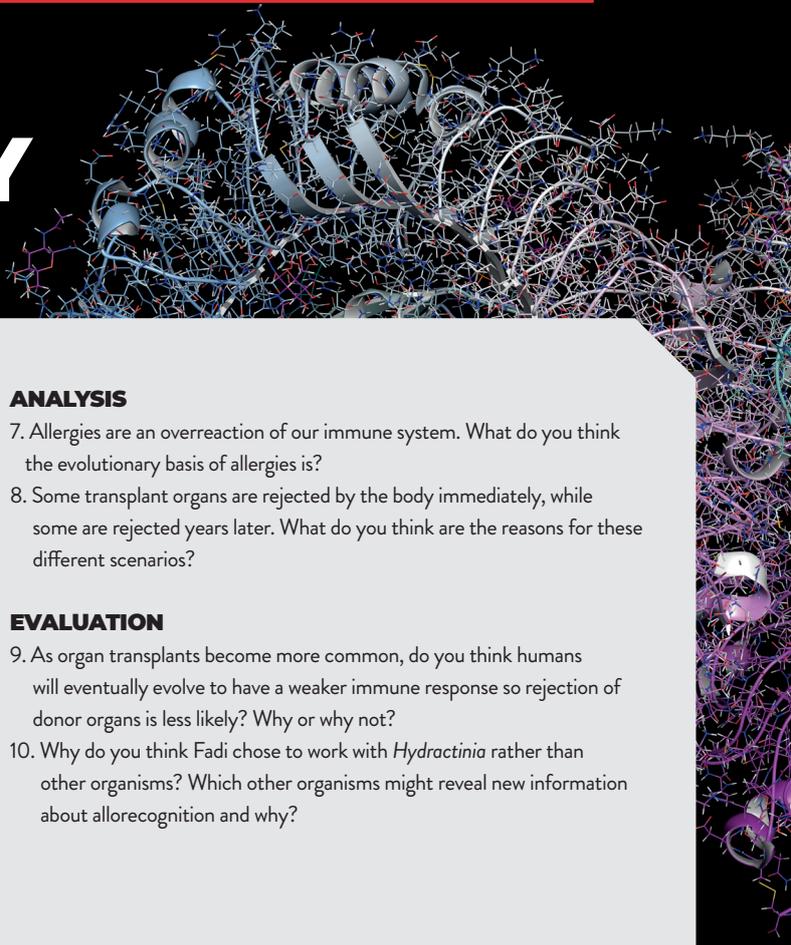


IMMUNOLOGY

WITH DR FADI LAKKIS



Talking points

KNOWLEDGE & COMPREHENSION

1. What is allorecognition?
2. What are the main differences between the adaptive and innate immune systems?
3. Why is allorecognition generally evolutionarily advantageous?
4. What defines whether it is advantageous or disadvantageous for a *Hydractinia* to fuse with another?

APPLICATION

5. What questions would you ask Fadi to learn more about allorecognition during pregnancy? Think of molecular, genetic and evolutionary perspectives.
6. It is often recommended that kidney transplants use a kidney donated from a close family member. Why do you think this is? Why is this recommended for all organ donations?

ANALYSIS

7. Allergies are an overreaction of our immune system. What do you think the evolutionary basis of allergies is?
8. Some transplant organs are rejected by the body immediately, while some are rejected years later. What do you think are the reasons for these different scenarios?

EVALUATION

9. As organ transplants become more common, do you think humans will eventually evolve to have a weaker immune response so rejection of donor organs is less likely? Why or why not?
10. Why do you think Fadi chose to work with *Hydractinia* rather than other organisms? Which other organisms might reveal new information about allorecognition and why?

Activity

As Fadi mentions, the immune system has a role in a vast array of bodily functions. This also means that the impacts of the immune system going wrong can be diverse.

Fill out the following table which refers to a variety of disorders of the immune system. What similarities do you find between the diseases? What lessons are there to be learnt from their various treatments?

Disease	Cause	Effect on body	Treatment
Lupus			
Asthma			
Type 1 Diabetes			
Crohn's Disease			
AIDS			
Severe combined immunodeficiency (SCID)			

More resources

- BiteSized Immunology offers accessible insights into many different areas of immunology: www.immunology.org/public-information/bitesized-immunology. Its article on allorecognition and organ rejection is here: www.immunology.org/public-information/bitesized-immunology/organs-tissues/transplant-rejection-t-helper-cell-paradigm
- This article explores an experiment into allorecognition using amoebas: biobeat.nigms.nih.gov/2015/06/how-a-cell-knows-friend-from-foe
- This video gives a quick overview of why transplant organs might get rejected by the body: www.youtube.com/watch?v=rznRZgsD3yk