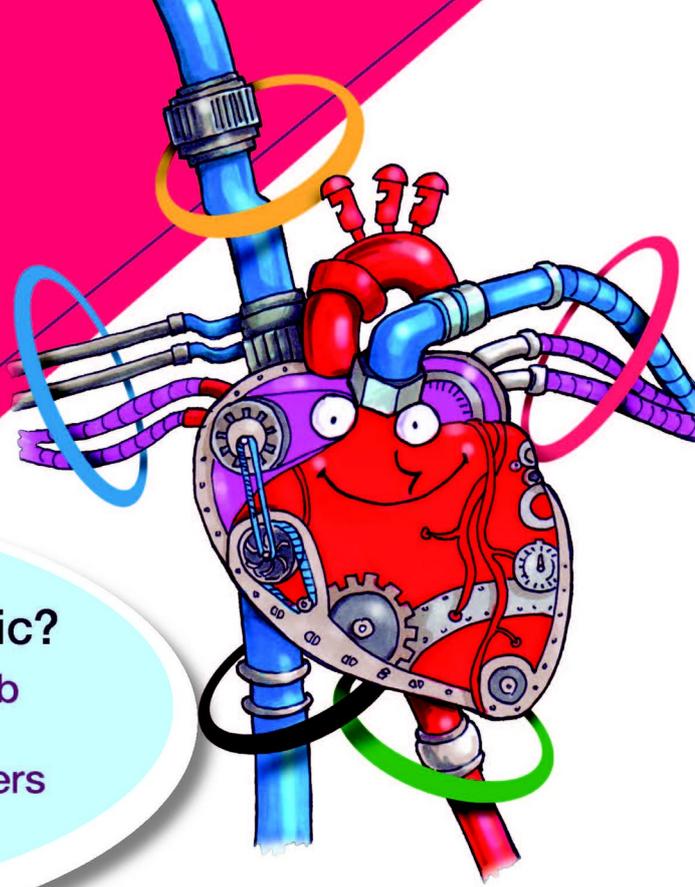




# Baylab

## National Science Competition



Think you have what it takes to be a top heart mechanic?

Then enter your ideas for the Baylab nationwide school competition. You could win up to £2,000 in vouchers for sports or science equipment for your school!

With the Olympics hopefully taking place this year, we would like you to take on your own triathlon competition.

You will participate in 3 challenges that will test your heart health knowledge. Points for each challenge will be awarded based on your imagination and creativity. The more challenges you complete the more points you can win!

The entry with the most points will be the winner, so will you take the Gold, Silver or Bronze medal?

Primary and Secondary school students can enter the competition by themselves, as a group, or even as a class, the choice is yours. To enter, please fill in the form below and ask your teacher to send to Baylab at the following address **Baylab, 400 South Oak Way, Green Park, Reading, RG2 6AD** or by email to **Baylabinfo@bayer.com** by 31st March 2021 for your chance to win.

**Good luck – we can't wait to receive your entries!**

**Entry details.** Please fill in your details using the form below:

School name Presdales school

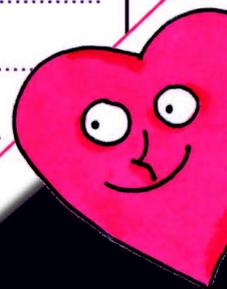
School address Hoe Lane, Ware SG12 9NX

Contact email (School) Admin@presdales.herts.sch.uk

Contact telephone (School) 01920 462210

Student name(s) Tayla-Mae Deane

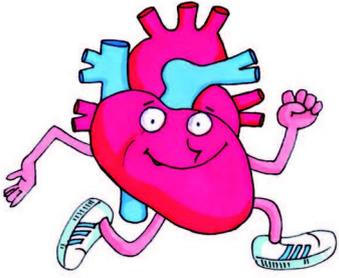
Student age(s) 11 years old



# Entry Form

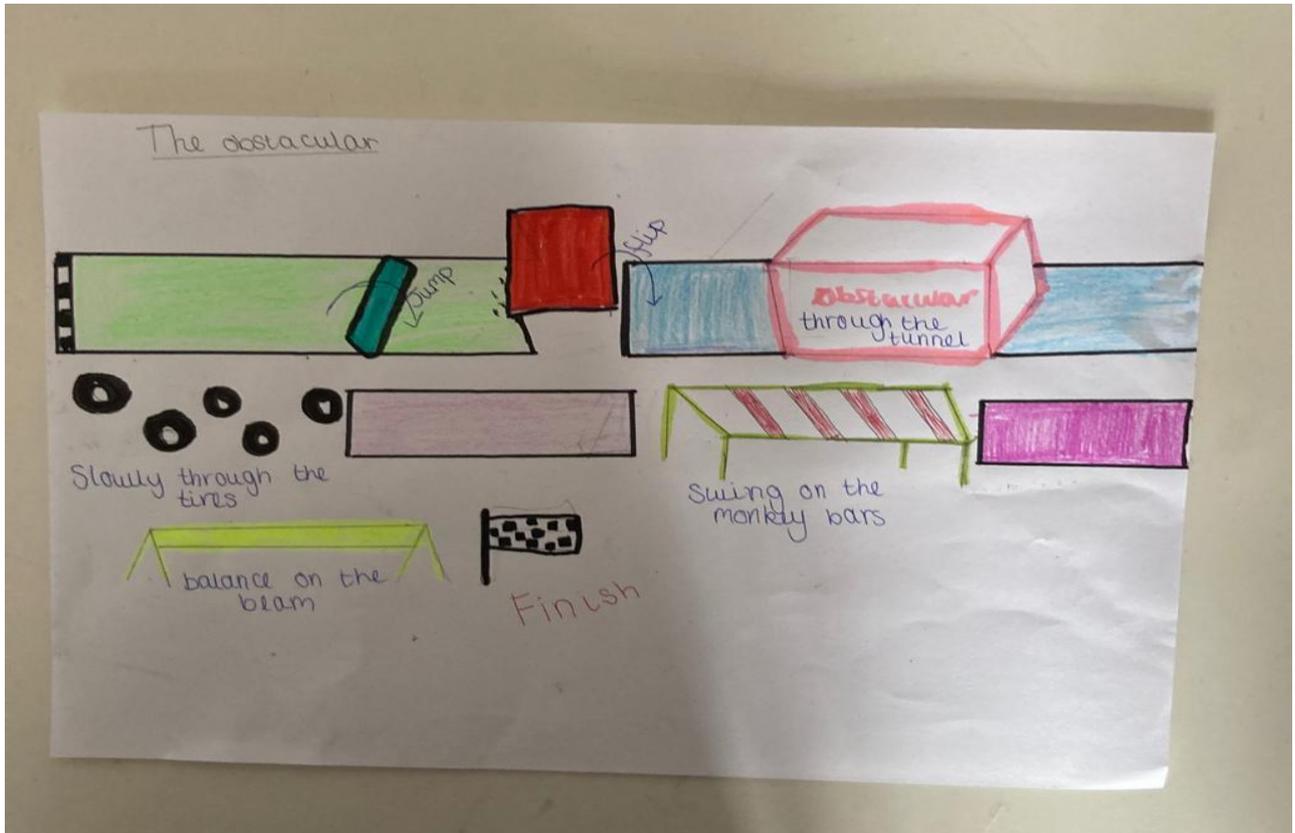
# Challenge #1 - A new Olympic sport

10 points



Using the space below create a brand-new Olympic sport. The heart is your theme, so make sure that this new sport gets your heart pumping!

**On your marks, get set, GO!**



Using the text box below, write a short description of your sport and explain how this new sport helps keep your heart healthy:

This keeps the heart healthy because it is very active and keeps the blood flowing  
It will increase their heart rate and endurance by physically maneuvering through the  
ventricles, valves, atriums and aorta. Also it strengthens the mind and body physically and  
emotionally. Memory and Problem Solving, Sensory Processing, Motor Skills and  
coordination also is an effect of the obstacular. The speed difference is also very important  
because on the tires it is all about going slow and taking your time. Whereas on the run you  
try to go as fast as you can.



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#1

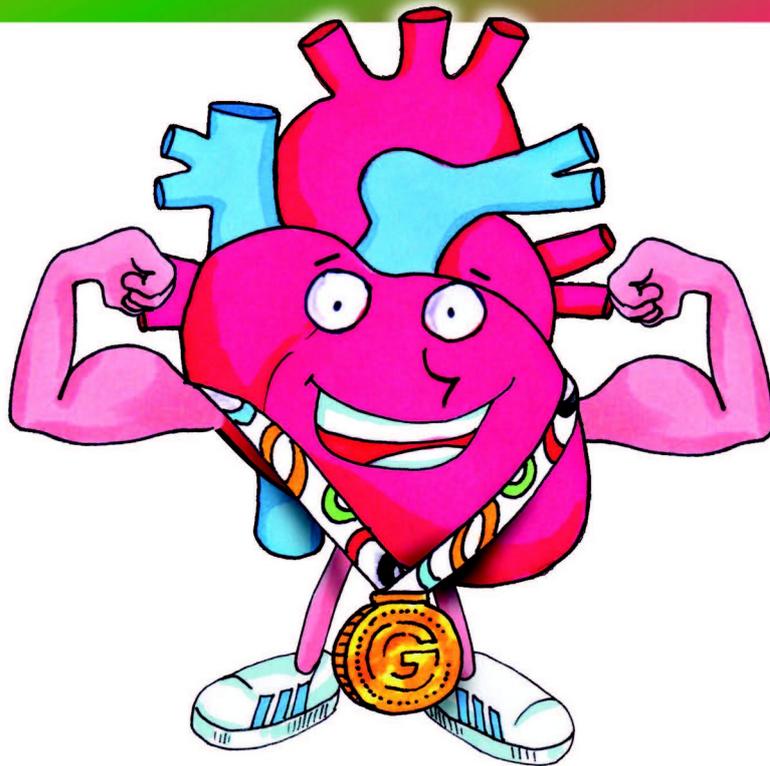


# Challenge #2 – A three course meal fit for an Olympic champion!

10 points

Now you have designed a brand-new Olympic sport, we would like you to design a three-course meal fit for an Olympic champion! If you want to go the extra mile and draw your meals please do – but most importantly please include the recipes for your scrumptious starter, main and dessert and explain why you have chosen your ingredients.

Remember, the heart is our theme so make sure that you include heart-healthy ingredients in your recipes like leafy green vegetables and whole grains.



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National Science Competition

#2



# Challenge #2 – A three course meal fit for an Olympic champion!

10 points

## STARTER



### Recipe:

ministrone soup

### Ingredients:

- .Carrots
- .Red Pepper
- .Noodles
- .Potatoes
- .Peas
- .Onions
- .Swede

*please continue on extra sheet provided*



Baylab

National Science Competition

#2



# STARTER

Carrots are good for the heart because the American Heart Association (AHA) encourage people to add less salt, or sodium, to meals, while eating more foods that contain potassium, such as carrots. Potassium helps relax the blood vessels, reducing the risk of high blood pressure and other cardiovascular issues. A large study in the Netherlands shows that people who eat carrots often have a lower risk of coronary heart disease than those who seldom or never eat carrots, even after adjusting for other lifestyle factors. Onions contain antioxidants and compounds that fight inflammation, decrease triglycerides and reduce cholesterol levels — all of which may lower heart disease risk. The insoluble fibre content present in peas helps reduce the risk of heart disease and stroke. Apart from this, peas also help in ensuring stable blood sugar regulation in the body. Despite being relatively low in some nutrients like fiber and protein, instant noodles contain several micronutrients, including iron, manganese, folate and B vitamins. Some instant noodles are also fortified with additional nutrients. Potatoes contain nutrients that contribute to a dietary pattern that can lower blood pressure and improve cardiovascular health, including potassium, magnesium, vitamin C, niacin, and vitamin B6. Swede is good for the heart helps Blood pressure and Cardiovascular Health: The potassium in swede can help lower blood pressure by reducing stress. It's fibre content also helps to reduce cholesterol levels. Red peppers are a particularly good choice for heart health as they are full of lycopene, which is not found in green peppers. They are also a source of cholesterol-lowering soluble fiber and powerful antioxidant vitamins A and C, which are good for heart health.



# Challenge #2 – A three course meal fit for an Olympic champion!

10 points

## MAIN



### Recipe:

Grilled Peri Peri Chicken

### Ingredients:

Chicken breast

Peri Peri Sauce - Chilli, Garlic, Tomatoes, Lemon and Paprika

Wholegrain Rice

Broccoli

*please continue on extra sheet provided*



## MAIN

Chicken Breasts provides under-consumed vitamins and minerals, and can be center of the plate for a heart-healthy, low-fat, low-cholesterol diet, such as the DASH. Grilling the chicken is very good as it lowers the chances of type 2 diabetes, obesity, and high blood pressure -- all of which raise your odds of heart failure. Chilli is good for the heart because eating chilli peppers has been associated with a lower risk of a fatal heart attack and stroke. Eating chillies more than four times a week is associated with a reduction of death risk for cardiac and cerebrovascular causes, a study found. Garlic has long been associated with health benefits -- from curing a cold to lowering blood pressure and cholesterol levels. Garlic contains vitamins C and B6, manganese and selenium, but it's a chemical called allicin, a type of antioxidant, which is thought to be responsible for its positive effects. Other nutrients in tomatoes, like vitamins B and E and antioxidants called flavonoids, may boost your heart health, too. Tomatoes play a big role in many heart-healthy recipes, and these rosy-hued veggies can do much more than brighten ordinary salads and pasta dishes. Lemons are a good source of vitamin C. One lemon provides about 31 mg of vitamin C, which is 51% of the reference daily intake (RDI). Research shows that eating fruits and vegetables rich in vitamin C reduces your risk of heart disease and stroke ( 1 , 2 , 3 ). Paprika contains capsaicin, a compound found in peppers that has been shown to have a wide range of health benefits. For example, it has antioxidant properties, can help reduce the risk of cancer and heart disease, improve immunity, and even alleviate gas. Many of the nutrients in brown rice help keep your heart healthy. It's a rich source of dietary fiber, which can reduce your risk of death from heart disease. Brown rice also contains high levels of magnesium, which can help make you less vulnerable to heart disease and stroke. In addition to reducing cholesterol, broccoli can aid in heart health by helping to keep blood vessels strong. The sulforaphane in broccoli is also an anti-inflammatory and may be able to prevent or reverse damage to blood vessel linings caused by chronic blood sugar problems.



# Challenge #2 – A three course meal fit for an Olympic champion!

10 points

## DESSERT



### Recipe:

Fruit and yoghurt

### Ingredients:

..Pineapple .. Low fat yoghurt

..Kiwi

..Melon

..Watermelon

*please continue on extra sheet provided*



Baylab

National Science Competition

#2



# DESSERT

Pineapples are a good source of antioxidants, which may reduce the risk of chronic diseases such as heart disease, diabetes and certain cancers. Many of the antioxidants in pineapple are bound, so they may have longer lasting effects.

Kiwis contain fiber, potassium, and antioxidants, all of which may support heart health. The American Heart Association (AHA) encourage people to increase their potassium intake while reducing their consumption of added salt, or sodium.

Melons are an excellent source of potassium, a nutrient of which most Americans do not get enough in their daily diets. The American Heart Association says potassium helps lower blood pressure by reducing the effects of sodium and relaxing blood vessel walls.

Watermelon is rich in an amino acid called citrulline that may help move blood through your body and can lower your blood pressure. Your heart also enjoys the perks of all the lycopene watermelon contains. Studies show that it may lower your risk of heart attacks.



# Challenge #3 –

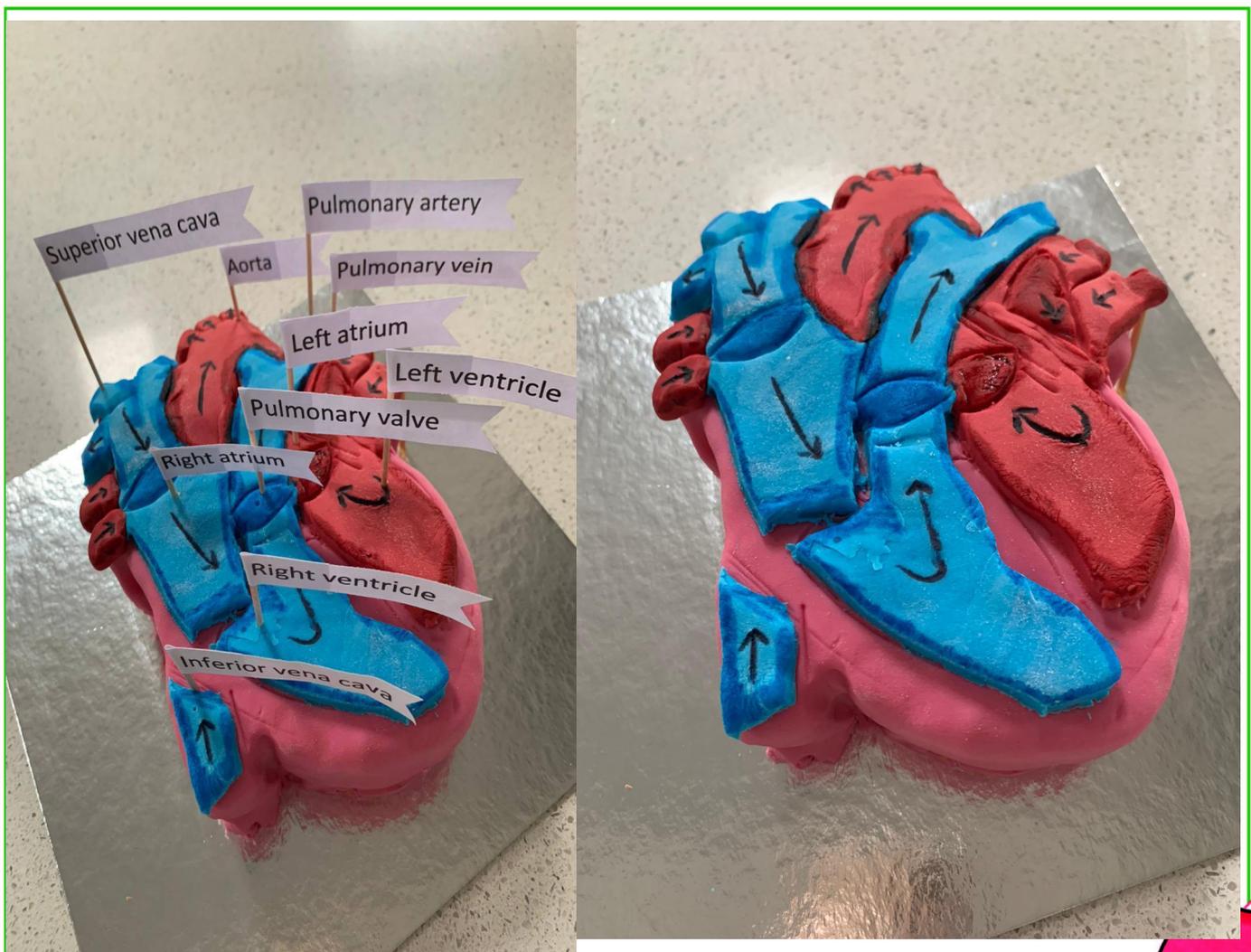
10 points

## Heart model masterpiece

Your third and final challenge is to design your own anatomically correct model of a heart, with all major structures labelled. You can craft your heart out of any material you like – clay, papier-mache, Lego – the choice is yours!

Once your masterpiece is complete, take a photo, print it out and stick it in the box below.

Remember, don't throw your model away once you are finished – if you are chosen as the winner the Baylab's team will visit your school to see your model in person.



*please continue on extra sheet provided to write explanation about your model*

# Challenge #3

## Heart model masterpiece

Using the text box below, write a short explanation on how the various structures in your model work.

The heart is one of the most important organs of the body. It has four chambers:

\*The right atrium receives blood from the veins that has already circulated through the body and pumps it to the right ventricle.

\*The right ventricle pumps the oxygen-poor blood to the lungs through the pulmonary valve where it is loaded with oxygen .

\*The left atrium receives oxygen-rich blood from the lungs and pumps it to the left ventricle through the mitral valve.

\*The left ventricle has the strongest/thickest muscle mass of all the chambers and is the hardest pumping part of the heart, as it pumps oxygen-rich blood that flows through the aortic valve to the rest of the body.

\*The superior vena cava carries blood from the head, neck, arms, and chest.

\*The inferior vena cava carries blood from the legs, feet, and organs in the abdomen and pelvis.

\*The aorta is the largest artery in the body that transports oxygen rich blood from your heart to the rest of your body.

I really enjoyed this project as it is close to my heart. My mum had a heart attack when i was 8 years old. After lots of tests they found she was born with a mutated gene (the DSP gene) which provides protein to the heart. Her left ventricle ejection fraction works at 29% which is classed as severe heart failure. Although her heart is very diseased and cannot be repaired, medication and a healthy life style can maintain it. As this is genetic there is a chance that I carry this gene but i cannot find out until i am 13.

