

Bitesize

Aerobic respiration

RHYS C'mon Rhys, you can do this.

Hey Chef! I need help to cook a roast dinner.

CHEF Sure. How far have you got?

RHYS Err, well the chicken is in. The carrots are cooking, I think. Now I have to do the peas.

ALFRED Downloading experiment using germinating peas.

RHYS What? No thanks, Alfred! I'm trying to cook a roast.

ALFRED Aerobic respiration is the process in which living cells release energy.

RHYS Aww, c'mon.

ALFRED Glucose plus oxygen makes carbon dioxide, water, and releases energy.

CHEF Exactly! Glucose. You can just use a little honey to make all the difference to your gravy.

ALFRED Thanks Chef. You can measure the energy released as heat by germinating peas whilst they respire.

A pea is a seed and germination is when a seed starts to grow.

RHYS And how about cooking peas?

ALFRED First disinfect your peas. This will kill any bacteria on their surface so that they don't respire in the flask. Pour the fresh peas into one flask and the same mass of boiled peas into another. The flask with boiled peas is the controlled experiment, used as a comparison. Boiling denatures the enzymes needed for respiration. The vacuum of the flask insulates the peas from

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outside changes in temperature.

Place a thermometer into the mass of peas in each flask, and seal with a plug of cotton wool. Take a reading and note the temperatures of both flasks at intervals throughout the experiment. The results should reveal that the flask filled with fresh 'germinating' peas will have increased in temperature, whereas the flask filled with boiled peas will have remained the same. You have just seen aerobic respiration in action.

CHEF Hmm... peas served in a flask. I'm using that in my next recipe!

RHYS Cheers.