



Classroom Activity

Big Question: How do we unravel the causes of disease?

Discover breath analysis

Breath analysis for disease detection has its roots in history with the link between distinctive odours on the breath and particular ailments known as far back as Hippocrates. In modern times, many researchers are pursuing the idea of early disease detection through the breath using various means. Thankfully, today's technologies are somewhat more sensitive than the human nose! Let's examine some of these technologies with the following activity.

Use the internet to research disease detection through breath analysis for the following health problems:

- Diabetes
- Liver disease
- Kidney disease
- Heart disease
- Cancer (lung, stomach or colon)
- Asthma

For each, determine as many details as you can from news items or information pages about the disease and the detection technology. You may like to start with those given in the 'Useful Websites' section of this article. Make a chart to display what you found out. This should include details like:

- Approximately how many people suffer from the disease worldwide?
- Who is developing the detection technology?
- What compound(s) are they trying to detect in the breath?
- What type of technology does the detection use (e.g. gas chromatography)?
- Is the technology used for detecting the disease itself, assessing the impact of treatment or something else?
- How accurate is their breathalyser technology?
- What are the current standard tests used and, if given, how does the breath test compare?
- What are some of the advantages of the breath detection over the current standard test?
- What sort of device are they trying to build (e.g. smartphone technology) and in what setting would it be used?
- What stage of development is it at?

You may not be able to get answers to all of these questions for every disease or detection method, but be as diligent as you can in your research. For some diseases there may also be multiple different technologies being developed, so you should also take care that you are collecting information about the same detector.

Extension questions for discussion

Which of the technologies you researched do you think has the potential to have the biggest impact worldwide? If you were an investor, which technology would you invest in and why?