

# Microbe Magic

Spring 2008



## Hello!

Welcome to the Spring 2008 issue of Microbe Magic. Scientists at the APC have been very busy visiting primary school students to teach you all about the 'Guts of Digestion'. We have lots more schools to visit, so I hope I'll see you soon.

## MIKE TAKES A LEAP FORWARD

On January 28th the new and improved Microbe Magic website was launched by Minister Micheál Martin, with the help of 5th class students from the Cork School Project. Led by Mike (who likes microbes!), the site has areas that explore 'Your microbes' and what goes on 'Inside your gut'. The website also allows you to 'Explore your body' and provides information on 'Healthy living'. There are lots of educational games to play and quizzes to do.

You and your teachers will also find experiments using everyday items that can be found at home or at school. 'Ask a Scientist' allows you to interact with scientists at the APC. With regular news and competitions and over 500 pages of information, there is something for everyone!

Check it out at <http://microbemagic.ucc.ie>



Pictured at the website launch are Minister Micheál Martin, teacher James Ryan, with students from the Cork School Project.



## COMPETITION TIME

Get your pen out, your creative juices flowing and start writing. We want you to write a Limerick about 'Digestion'. Sounds complicated?

Well here's an example,

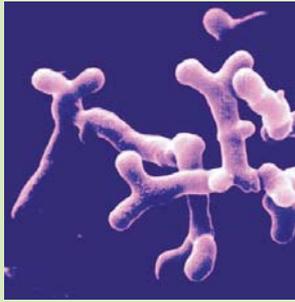
My tummy is always a rumbling  
Is it trying to tell me something  
I eat all of my meals  
But it never quite feels  
That the food is ever digesting

**Prize:** The winning student will receive an MP3 Player and a cuddly GI Jake.

**Submit your entries:** with your name, class, teacher's name and school by April 18th 2008 to Alimentary Pharmabiotic Centre, BioSciences Institute, University College Cork, Cork

# Bacteria in your gut

Bacteria are very important microbes - life on earth couldn't exist without them! Bacteria have only one cell, shaped like a sphere, a rod or a spiral. A single one, called a bacterium, is really tiny; millions would fit on the head of a pin!



Bacteria have been around for millions of years. They can live in any area of the earth, no matter how hot or cold, so they have no problem living on or inside us! Luckily, very few bacteria are harmful to us, in fact, most bacteria help to keep us healthy.

There are about seven hundred different types of bacteria living inside your gut right now! They make lots of copies of themselves, so many in fact, that there is no room for any bad bacteria to grow.

The bacteria in your gut all work together to keep us healthy by destroying bad bacteria, slowing down cells that are growing out of control and making vitamins. Even better than that, they help us to digest food - they are very busy! Bacteria help you to take the nutrients from the food you eat and make waste with the leftovers.

You can tell bacteria are working in your gut because you can sometimes smell the gas they produce. The gas builds up in your intestines; it is a waste product from the bacteria as they work to digest your food. When there is too much gas for your intestines, it escapes from your body as flatulence - which is also called a fart! If you eat certain types of foods, like beans or cabbage, the bacteria make lots of gas. The gas can get really smelly but eat the right food and chew your food really well and you shouldn't have a problem!

If you have a question about bacteria in your gut, why not ask an APC scientist? You can click on the 'Ask a Scientist' button on the Microbe Magic website or email Mike at: [MicrobeMagic@ucc.ie](mailto:MicrobeMagic@ucc.ie) and he'll pass on the message!



## Teacher's Task

### To mould or not to mould

Sometimes you open a bag of bread and what do you find? Mould!! What conditions make bread mould grow the best?

**What you need:** 4 slices of bread, 4 zip-lock freezer bags, water & a spoon of sugar



**What to do:**

1. Label the bags A, B, C & D and put one slice of bread in each bag.
2. Bag A: Sprinkle a little water on the bread.
3. Bag B: Dissolve a teaspoon of sugar in a cup of warm water and sprinkle a little on the bread.
4. Bags C & D: Do not add anything to the bag.
5. Make sure each bag is sealed tightly. Place bags A, B & C in a dark, warm place. Place bag D in the fridge.
6. Check each bag daily and record any changes in the way the bread looks.
7. At the end of the two weeks, throw out all the bags unopened.

**Result:**

From this activity can you tell what helps mould to grow best? What conditions slow mould growth?

## BACTERIA IN YOUR GUT WORDSEARCH

Find the underlined words in the 'Bacteria in your gut' article and reveal the hidden message

G	N	I	V	I	L	L	E	C	A	B	F
S	T	N	E	I	R	T	U	N	A	Y	L
T	S	E	G	I	D	L	O	C	S	L	A
E	G	A	B	B	A	C	T	K	S	L	T
S	E	N	I	T	S	E	T	N	I	E	U
Y	S	E	B	O	R	C	I	M	A	M	L
H	W	S	C	I	I	M	D	O	R	S	E
T	O	E	U	H	A	R	M	F	U	L	N
L	R	M	N	T	S	P	H	E	R	E	C
A	G	N	I	Y	O	R	T	S	E	D	E
E	T	V	I	S	C	O	N	T	R	O	L
H	T	L	A	R	I	P	S	N	A	E	B

Hidden Message: \_\_\_\_\_

# INTERVIEW WITH A SCIENCE STUDENT

David Russell is a post-graduate student who recently joined the APC. He works in the APC laboratories at Teagasc, Moorepark Food Research Centre, Fermoy, Co. Cork.

**Q. Did you like science when you were in school?**

A. In secondary school Biology and Chemistry were two of my favourite subjects. My biology teacher was a really good teacher and made the subject very interesting. When I learnt more about bacteria and viruses it definitely encouraged me to study Microbiology in UCC.

**Q. What type of science are you studying now in the APC?**

A. At the moment I am involved in probiotic (good bacteria) research, on the strain *Lactobacillus paracasei* 338. You know that probiotic bacteria are very beneficial to your digestive health. The 338 probiotic has been shown to be a particularly good probiotic and I am working with a group of people to understand how it works and to investigate how well the probiotic survives in the gut.

**Q. When you are finished being a student, what kind of job do you think you will have?**

A. I hope to continue to work in the area of food and health, perhaps with a focus on probiotic bacteria.

**Q. Do you work with any of the animals in Moorepark?**

A. I know there are many cows and pigs in Moorepark, but I have not been involved in any feeding trials with these animals so far. Mind you, coming from a farming background I would actually enjoy that type of work! In fact, I had thought about becoming a vet at one stage!

**Q. Have you ever done any dangerous experiments?**

A. To be honest, no. However I do have to use some dangerous chemicals from time to time and always ensure that I wear protective clothing like a lab coat, safety glasses and gloves.

**Q. Since you work with food, food bacteria and dairy products, do you eat dairy products yourself?**

A. Yes, I love my food, and try to eat a healthy diet. I find that I feel better both physically and mentally when I eat well, and of course I always find time to do some exercise.



Pictured is David, being interviewed by Stephen and Fiona Ross

## GI Jake World Traveller!!!



GI Jake recently took a trip to the snow! He travelled to Andorra, a tiny country between France & Spain, where he spent a week snowboarding and even took a dog-sled ride!



GI Jake and Luke O'Cyte attended the BT Young Scientists Exhibition in the RDS, Dublin

# ASK A SCIENTIST

## Q. What does spit do?

A. Spit or saliva does lots of very important things. Your Saliva makes food easier to swallow by making it moist. It starts digestion by breaking down carbohydrates in your food using the enzyme amylase. Saliva helps to keep your teeth healthy and also contains an anti-bacterial enzyme called lysozyme that helps your mouth to fight bad bacteria. With so many important functions you would really miss your spit, so it's best to keep it in your mouth!



## Q. Why do you burp?

A. A burp is caused by a build up of gas in your oesophagus and stomach. The gas that you burp is different from the gas in a fart, which comes from lower down in your digestive tract. Burps are mainly made up of the gases nitrogen and oxygen and sometimes carbon dioxide from fizzy drinks. If you eat or drink too quickly, you swallow lots of air and this can make you burp.

## DID YOU KNOW:

The loudest burp ever from a human was as loud as a formula 1 racing car!



## Q. Can you digest everything we eat?

A. You can digest most of the things you eat every day except fibre. So why, if you can't digest fibre, do you need to eat it? Fibre's main job is to make your food bulky. As your food moves through your small intestine, it is digested. Fibre makes sure your food keeps moving and doesn't get stuck anywhere along the way. Fibre is really important to keep your intestines clean and free flowing!



# SCIENTIST AT WORK ART COMPETITION

Congratulations to Kate O'Donnell, St. Mary's Senior School, Dunmanway, Co Cork who received first prize in the Scientist @ Work Art Competition. Kate's picture and short story about Isaac Newton, Albert Einstein and a Modern Day Scientist can be seen on the Microbe Magic website <http://microbemagic.ucc.ie/>. Her teacher is Ms Elaine Robson.

Alanna ní Ghráda, Gaelscoil uí Riodáin, Ballincollig, Co. Cork, Ciara McCarthy, Conna National School, Co Cork and Marie O'Leary, Dromleigh National School, Co. Cork were highly commended winners.



Pictured is Kate O'Donnell receiving her prize from Dr Catherine Buckley, APC. Also pictured are Kate's parents.

## BT YOUNG SCIENTISTS COMPETITION

Congratulations to Shanua Leahy and Stephanie Archer, Presentation Secondary School, Ballyphehane, Cork. They received a Special Achievement Award nominated by SFI and were also Highly Commended for their project 'Finding new antimicrobials' in the biological and ecological intermediate category. Their teacher Ms Gretta O'Sullivan was a STAR teacher researching with Dr Paul Cotter and Professor Colin Hill, APC, last summer and the girls spent some time in the APC learning about microbiology.



The Alimentary Pharmabiotic Centre is a research centre funded by Science Foundation Ireland and is a partnership between University College Cork, Teagasc (Moorepark) and Industry.



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