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UNIQUE TALES

FELIX! THIS IS YOUR FAULT! DO SOMETHING!

I...I CAN'T THINK...

STARRING TIM AND FELIX IN... "ALL IN THE MIND!"

ENTER THE WEIRD WORLD OF THE IMAGINATION!
WHAT IF THE PUPIL COULD SEE EXACTLY WHAT THE TEACHER IS THINKING?

DON'T BE MODERATE, UNCLE. IF YOU THINK IT'S GOOD, SAY SO!

IT WOULD LEAD TO MUCH GREATER UNDERSTANDING.

MY INVENTION WILL CHANGE THE WORLD!

YOU'VE INVENTED THE MOTORBIKE? I THINK YOU OUGHT TO KNOW....

VERY FUNNY! YOU ARE LOOKING AT THE FUTURE OF EDUCATION.

THERE'S A HEADSET FOR THE TEACHER AND ONE FOR THE PUPIL.

WHEN THEY ARE CONNECTED UP, YOU'LL BE ABLE TO SEE MY THOUGHTS.

READY, TIM?

WOW! WHERE ARE WE?

IN THE LANDSCAPE OF MY IMAGINATION.

COULDN'T YOU IMAGINE YOURSELF IN SOME BETTER CLOTHES?

RIGHT! YOU ASKED FOR IT!

HELP!

WELCOME TO THE WILDEST RIDE IN THE BRAINVESSE!

NOW WHAT?

A WORLD OF STICKY TOFFEES, YOU WON'T HAVE TO WORRY ABOUT GOING TOO FAST.

STICKY TOFFEES? WELL, YOU CAN SICK THIS WHOLE IDEA.

RELAX, RELAX... DOES THIS PLACER SUIT YOU BETTER?

AT LAST! SOMEWHERE NORMAL.

THAT'S RIGHT... THOUGH I SHOULD WARN YOU ABOUT...
...PAVEMENT SHARKS!

WOW! WHAT A BEAST!

THIS IS JUST A BIG JOKE TO YOU -- ISN'T IT?

I MUST THINK! WHAT DO I KNOW ABOUT DINOSAURS?

SORRY, TIM. NO MORE TRICKS FROM NOW ON.

LET'S SEE ABOUT THE HOMEWORK TOPIC OF YOURS.

COME ON! THIS WAY!

HE CAN'T FOLLOW US IN HERE!

WHY DIDN'T YOU JUST MAKE IT VANISH?

BECAUSE AS YOU WILL SOON UNDERSTAND, I DECIDED TO USE MY BRAIN.

NOT DINOSAURS!! THE HUMAN BODY!! THE HUMAN BODY!!

OH YES... I FORGOT.

WHAT IS THIS PLACE? A MAZE?

NO -- BUT IT IS A-MAZE-ING.

HOWEVER, WE CAN'T MAKE MUCH SENSE OF IT FROM HERE...

...SO...
...LET’S FLY!

THAT MAZE—IT WAS A HUMAN BRAIN!

WOW!

THAT’S RIGHT. GREATER THAN ANY COMPUTER.

IT HELPS YOU TO THINK. REMEMBER, TO SOLVE PROBLEMS.

IT CONTROLS YOUR HEARTBEAT, YOUR BREATHING...

AND STORES AS MUCH INFORMATION AS TWENTY ENCYCLOPEDIAS.

AND IT SENDS MESSAGES ALONG YOUR NERVES FASTER THAN AN EXPRESS TRAIN.

AND ANOTHER THING ABOUT THE BRAIN...

UNCLE FELIX — WAIT.

I’VE ALREADY WRITTEN ABOUT THE BRAIN— AND THE HEART— AND ALL THAT STUFF.

WELL, I’M VERY SORRY IF I’VE BEEN BOTHERING YOU AND WASTING YOUR TIME.

THAT ISN’T WHAT I MEANT.

WHAT I REALLY NEED TO KNOW ABOUT ARE THOSE TINY THINGS— YOU KNOW— CELLS AND GENES AND...

SAY NO MORE! PREPARE YOURSELF. YOU ARE ABOUT TO VISIT... THE MICRO WORLD!

WE’RE SHRINKING!!
WHAT IS THIS PLACE? YOU CAN HARDLY MOVE FOR THESE WEEKS.

This is human skin... as you've only seen it before through a microscope.

Hmms, that's right, but why don't we travel in style?

At last, you've imagined something cool!

Look down there, Tim. That's a cell.

What? That fried-egg-looking thing?

Yes, our bodies are made of trillions of them.

Okay, we're low enough not to need the parachutes.

I hope you're right!

Shall we take a closer look?

Don't panic! You can have a parachute.

Thank goodness!

So... how big are these cells?

You've seen a millimetre on your school ruler.

Well, one hundred cells could fit along that tiny space.

Look at it, Tim. We all grow from just one cell. By the time we are born, we already have two hundred million of them!

But how do we know that this thing will become a person?

See this acorn? If I plant it, what will it become?

Well... I suppose an oak tree. Correct. Not a cabbage, nor a seaweed, nor even a palm tree.

I get it...

Exactly. This cell can grow into a person... and nothing else.

That bit in the middle is the nucleus. That's where we find all the instructions.

If you say so, I can't see any instructions.

You might see more clearly if you follow me up here.

Can't anything be simple?

It has to grow according to the information stored inside it.
It's staffed! But I still can't see any instructions from here.

That's because you're standing on them!

You see, Tim, this ladder is made of stuff called DNA, it's found in the nucleus of a cell.

D.N.EH?

Look out! Coming down!

Now you've turned it into a slide!

Whooee!

Well, it still doesn't look like information to me!

Well, the pattern of those four colours decides how we will grow.

Anyway... there's miles of this DNA stuff... how could it possibly fit inside one cell?

Because it is wound up very tightly into those things!

Run! There's hundreds of them!

Not hundreds, forty-six in each cell... they're called chromosomes.

Chromosomes? I've heard of those.

They're nothing to worry about.

They're on the move to a new cell... and we're in their way!

Whoops! This one hasn't seen us!

I don't want to hurt him... but I don't want to be trapped either!
ONE GOOD TUG... AND HE'S OVER!

WAIT, TIM? WHAT ABOUT THE GENES?

GREAT! NOW CAN WE GO?

ONLY THESE SPECIAL PARTS OF THE D.N.A. TELL THE BODY HOW TO DEVELOP... WE DON'T KNOW WHAT THE REST IS FOR.

THEY'RE LIKE BEADS ALONG A NECKLACE.

THOSE 'BEADS' ARE THE GENES.

SO... THE CELL 'READS' THE CODED INFORMATION IN THESE GENES... WHICH TELLS IT...

...HOW TO GROW. THAT'S RIGHT. UH-UH, I DON'T THINK HE'S ANGRY, BUT I'M NOT WAITING TO FIND OUT!

YEAH, MAYBE IT WOULD BE A GOOD IDEA TO THINK UP SOME FAST TRANSPORT!

DONE! NOW LET'S GO BACK AND TAKE ANOTHER LOOK AT THAT CELL!

AW... CAN'T WE RIDE AROUND ON THESE FOR A WHILE?

NOW THERE'S TWO CELLS. IT'S MAKE AN EXACT COPY OF ITSELF.

HOW DOES IT DO THAT?

LET'S IMAGINE A CELL WITH JUST TWO CHROMOSOMES.

LET'S SNAP THESE BOARDS FOR CINEMA SEATS AND I'LL SHOW YOU...

OK... GOT ANY POPCORN?

THE X SHAPE SEPARATE into TWO NEW SETS OF CHROMOSOMES!

NOW THE NUCLEUS IS STARTING TO SPLIT INTO TWO!

IT HAPPENS AGAIN AND AGAIN... TELLING THE BODY TO GROW AS A PERSON GROWS.

THERE! TWO NEW CELLS EACH WITH THEIR OWN D.N.A.

DID YOU KNOW THAT CELLS... TIM?

IS EVERYTHING ALRIGHT?

WAIT FOR ME!
ALL THOSE MILES OF DNA! ALL THOSE THOUSANDS OF BASES IN JUST THE RIGHT ORDER. IT'S SO COMPLICATED!

There's so many chances for the cell to make mistakes when it copies itself.

LAST WEEK AT SCHOOL I COPIED ONE SENTENCE FROM A BOOK ... AND MADE THREE MISTAKES!

IT CAN HAPPEN, TIM. A PART OF A CHROMOSOME MAY BE MISSING.

OR TWO PARTS STUCK TOGETHER...

OR EVEN EXTRA BITS OF CHROMOSOME...

... AND YET IT WAS STILL VERY SPECIAL.

I SEE WHAT YOU'RE GETTING AT, UNCLE...

See the door up there, Tim? That's the way out of my imagination.

HOW ABOUT A BAG O' RICE? LAST ONE OUT MAKES SUPPER!

I'D SAY THAT I HAVE A GREAT CHANCE... NOW THAT YOUR BOARD HAS TURNED INTO A GIANT BANANA!

BE SURE TO MAKE SOMETHING TASTY!

ARE YOU KIDDING? YOU'VE GOT NO CHANCE!

POOR OLD RELIG... ALL THAT IMAGINING HAS TIRED HIM OUT.

WELL, NOW HE CAN ENJOY A LITTLE ADVENTURE IN MY IMAGINATION!

WHERE DO YOU KEEP YOUR RAT POISON?

This book could give you NIGHTMARES! Are you brave enough to read it alone?

As crazy a collection of terrifying monsters as you've ever seen.

The Big Book of Horrible Monsters and Scary Places.

The End.
Hi!

I hoped you liked reading about my visit with Uncle Felix. I thought I had better tell you a little bit more about **chromosomes** and **genes**.

Just about every living being — including humans like you and me — is made of lots and lots of **cells**. We have **billions** of cells in our bodies. Cells are like tiny bags of liquid all stuck together. There are different types of cells in different parts of your body. You can only see human cells by looking at them down a **microscope**, which makes them look much bigger than they really are.

Inside each cell there is something called a **nucleus** — this is where the chromosomes are found. Chromosomes look like long threads of cotton and humans usually have 46 of them in nearly every cell in their body.

Chromosomes are made up mainly of stuff called **DNA**. Chromosomes are really important because they contain the instructions that help our bodies grow and work properly. These instructions are called genes. Each gene has a special job to do.

Sometimes a baby’s chromosomes may be different from usual. Bits of chromosomes may be missing, there may be extra bits of chromosome or bits of chromosome may be swapped round. This means that the genes on those bits of chromosome will also be missing, extra or swapped round and so they might not work properly.

How this affects the baby or child depends on the jobs of the genes involved. If the gene’s job is usually to make a baby’s heart work properly, then the baby may have something wrong with its heart if that gene has gone wrong. Some genes tell the brain how to work properly, so if these genes are affected then the baby may find it more difficult to learn new things as it grows up and may need extra help at school.

Uncle Felix told me that there are about 30,000 different genes in humans. These genes have different jobs to do and any of them can be affected.

That’s why people with different chromosome disorders are so special and unique!

I am sure that if you have any questions about chromosomes and genes, your Mum, your Dad or your teacher may be able to help.

If they are not sure then maybe you can visit the library or search the Internet together for more information.

I’m off now — got more cooking to do!

Tim
In loving memory of our son,
Joshua Marshall Kirby,
aged 21 months –
46,XY,t(2;6)(q21.1;q25.1).
None of us knows what is round the corner
– cherish every moment as if it were the last.