

# CANS OF JAM<sup>2</sup>

issue 18, three-years-old, March 2013

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Hello everybody!

This issue was long in the making, and at one point, we thought that it would be the last, (not *latest*; I really mean *last*) issue of *cans of jam<sup>2</sup>*, because we received nearly no articles from the pupils before the mid-February deadline; so we considered different possibilities, like cancelling the issue, or the whole project, and sending you a short note saying that it was all over; or sending a totally blank issue; or publishing the little we had, and not saying anything... But then, well, as we are optimistic, we decided to keep going, and simply delay the release of this issue until the Open Doors Day (16<sup>th</sup> of March) and our annual trip to England (17<sup>th</sup> to 23<sup>rd</sup> of March). Meanwhile, the articles began coming in, then **pouring** in... so we are relieved to say that *cans of jam<sup>2</sup>* is still alive and well!

Also, we had a very pleasant and satisfying piece of news (see the email of the month) from Brittany, and that gave us so much pleasure that, well, we are very happy again!

## Open Doors (in HZ University and in Langevin)

by the editors

We (the editors) went to the Open Doors Day of HZ University in the Netherlands early in February, with some 23 pupils, as well as 3 teachers and 26 pupils from another lycée of Beauvais.

This university was until recently specialized in everything that touches water and deltas : from civil engineering in fragile coastlands to saving sea life, etc. Recently, it has also developed other courses, like business and languages, or economics.

The pupils enjoyed the stay, and were very interested, as you can see on the photos, but they did not write any article, so we did, for once...



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## Nuclear fusion

by Loïc P.

Nuclear fusion is a process in which two or more nuclei combine to form a larger nucleus. We can see this reaction in the sun, for example.

The fusion of nuclei generates huge amounts of energy from mass changes taking place in nuclear reactions ; indeed, thanks to Einstein's famous equation, we know that if an object loses mass, it loses energy. Fusion would be able to produce more energy than fission (which is what is done in nuclear plants today).

Furthermore, the oceans naturally contain enough deuterium to allow powering the planet for 100 million years, and unlike nuclear fission, fusion products are not radioactive.

However, no industrial application of fusion have been completed yet. But one day maybe...

## Readers' emails

Hello editors,

I received the mag; you can see it is Christmas time, it has put on weight! Could you make a lighter pdf version? Or else, you can send the original to me and I will compress it as much as I can.

Issue after issue, the magazine is heavier and heavier, up to 2Mo until now, but this time, it is nearly 6Mo!

Could you ask the pupils to **insert** their pictures instead of **pasting** them, that is usually where the problem comes from...

Enjoy your holidays, and Merry Christmas!

*Michel, from Beauvais, 60*

*For the other readers, Michel is our webmaster, so it is he who publishes cans of jam<sup>2</sup> on the school's website, as soon as we send it to him.*

*Well, Michel, your message has been transmitted; but teenagers on computers **do** have some bad habits sometimes...*

Thanks a lot and see you soon! Kisses.

*Eric, from Saint-Joseph (Reunion Island)*

*It is always good to have faithful fans on the other side of the world... Thank you, too, Eric!*

Thank you for your email. Your latest issue is now on line on the academy website. I wish you all an excellent year 2013.

*Pierre, from Amiens, 80*

*2013 did not start very well for the magazine, Sir, but we hope your wishes will counterbalance it!*

*Cans of jam<sup>2</sup> is a scientific magazine written by the pupils from the European classes of Paul Langevin High School in Beauvais, Oise. It is free, available mainly through internet, and usually published for each school holiday period.*

*If you want to subscribe and receive an internet copy of cans of jam<sup>2</sup>, all you need to do is send an email entitled 'cans of jam<sup>2</sup>, subscription' to [didier.galard@ac-amiens.fr](mailto:didier.galard@ac-amiens.fr), and you will be added to our mailing lists. And that is free as well!!*

## the e-mail of the month

Hi, we are a group of students + teachers from Brittany (!) very fond of your work and thus we'd like to receive your magazine by mail if possible. My students have really appreciated your idea of a science magazine written by students of European section.

I think they are going to think about it for their high school too if that doesn't bother you...Don't worry it will be a bit different as they have many other ideas linked to their trip in Belgium and their comics about science history. We will send you the first issue of course !

Congratulations for your great job. We wish you well with cans of jam<sup>2</sup>.

Regards

*lycée les cordeliers, from Dinan, 22*

*Hello, friends from Brittany!*

*Your email has been a great joy to us, so thank you very much!*

*We are always very happy to receive praise, and even more happy to be taken more or less as models or inspiration -so no problem, you are welcome to launch your own science magazine -and indeed, we would like to subscribe and receive it (and not just the first issue!). Now, a trip to Belgium, that is an interesting idea; Brussels is a very good place for science... We are looking forward to reading your magazine, and of course, you have been added to our mailing lists!*

## Bionic Man

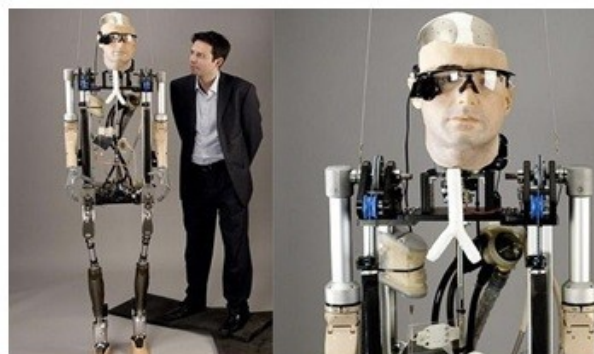
*by Jean C.C.*

His name is Rex.

He is a bionic man, but not a simple one; he is the most advanced in the world. He sees, he walks and his heart pumps blood but still, he is not alive.

It is the result of three months of collaboration among scientists, researchers and a TV production company. His prostheses are already available; his organs are scientific prototypes; and his blood, made from plastic, is a precursor of the coming breakthrough.

“we are approaching a point where technology can fully replace any functionality of the human body,” says project leader Bertolt Meyer of the University of Zurich.



## The Blue Brain project

*by Julie H.*

The Blue Brain project has for objective to build an “artificial brain” by reverse engineering. That is to say to make a copy of this object without plans or fabrication methods. The project was born in the Federal Polytechnic School of Lausanne in Switzerland in 2005 with the aid of IBM which supplied the BlueGene/L supercomputer they needed to devise the virtual brain.

Henry Markram gathered 35 mathematicians, software designers, biologists and physicians and in 2008 they completed the first stage in the project : they translated the biologic properties of a rat's brain into mathematical data. This neuronal network, the size of a pinhead, is repeated a number of times in the cortex. A rat's brain has about 100,000 columns of about 10,000 neurons each. In humans, the numbers are dizzying! A human cortex may have as many as two million columns, each having about 100,000 neurons each. However, To Markram, the first artificial mammal brain will be born in 2018.

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## Gliese 581 g

by Kevin L.

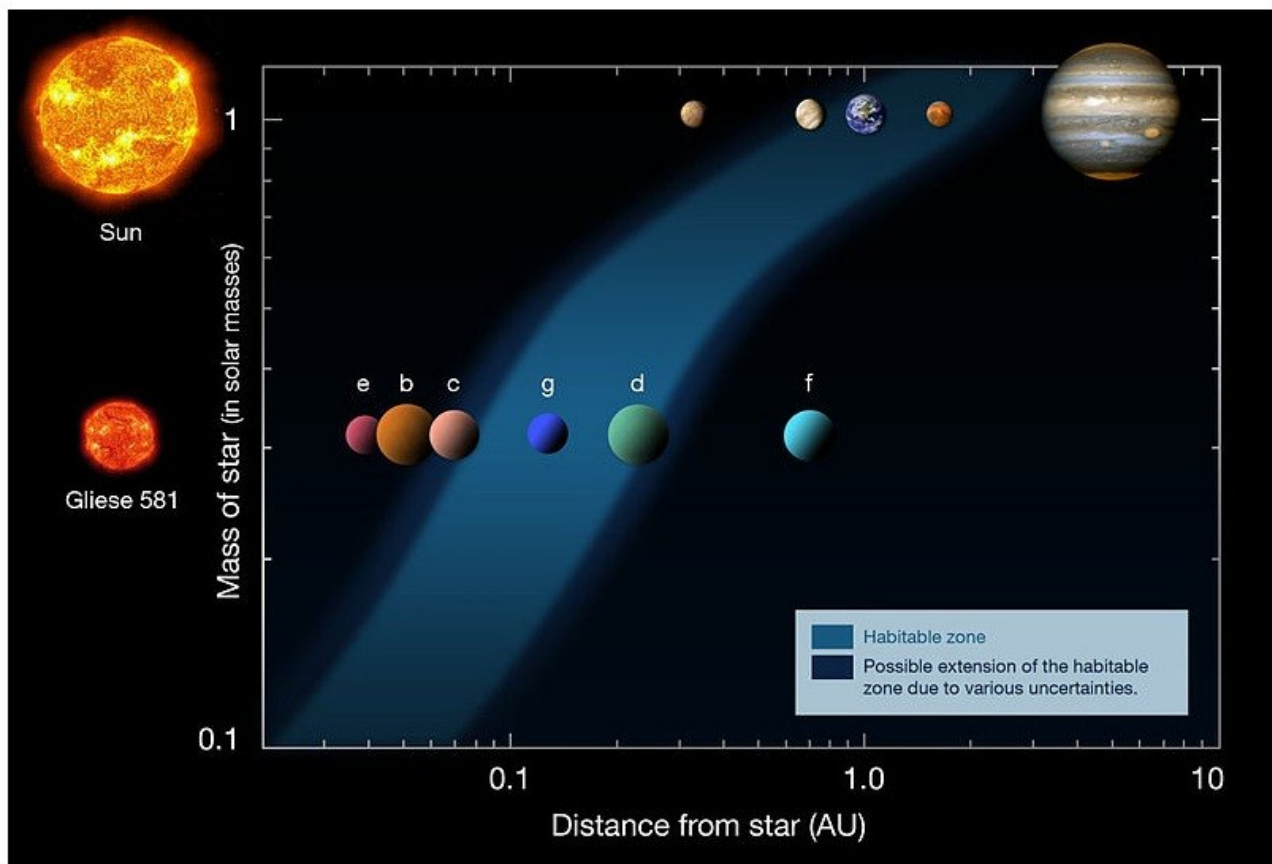
*[editor's note : in issue 7 (Christmas 2010), we told you a little about Gliese 581 c, a not-too-far-away planet on which there could be life; but this one is even better].*

Gliese 581 g is a planet out of the solar system, more than 20 light years away. This planet is located in the planetary Gliese 581 system.

Gliese 581 g was discovered in September 2010 by the W. M. Keck Observatory in Hawaii. But this planet has attracted particular attention because it is inside the habitable zone of its star with life-supporting conditions.

The habitable zone is a zone where it is possible to find life. The other name of this zone is "Goldilocks Zone" in relation to the fairy tale "Goldilocks and the Three Bears" because in this zone there are all the conditions for life, in particular water in liquid form.

But for the moment, it is not yet possible for scientists to confirm the existence of life on this planet...



AU : astronomic unit, 150 million km (the distance from Earth to the Sun)



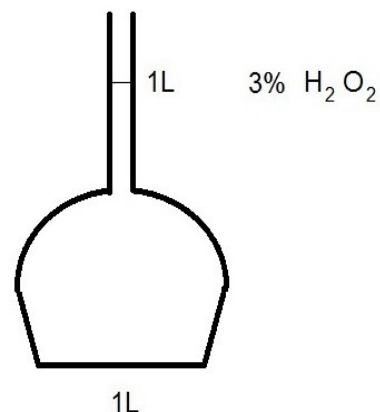
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## A chemistry experiment - and a game

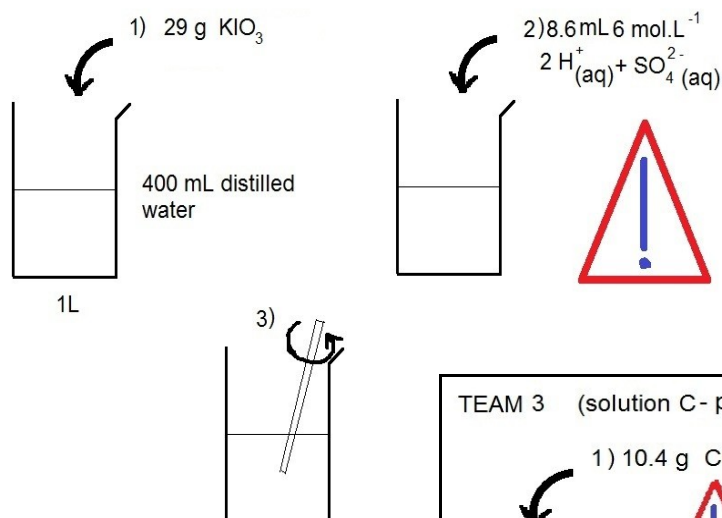
Now, for those who are more teaching-oriented, here is a little game-and/or-teaching-help-all-in-one : here are the instruction sheets that we gave to our pupils recently; each team had one boss (who had the instruction sheet and had to give the instructions to the others) and two to four other pupils.

Look at the instructions, then according to your chemistry and/or English level, you can try to name the products, or write the complete instructions, and guess what the pupils observed at the end; then you can explain the phenomenon, and as a bonus question, try to find the relation between this experiment and foxes and rabbits...

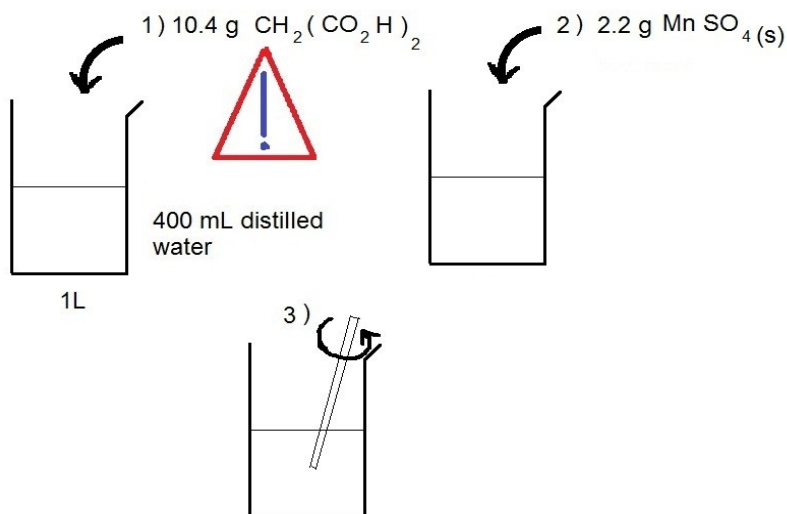
TEAM 1 (solution A)



TEAM 2 (solution B)



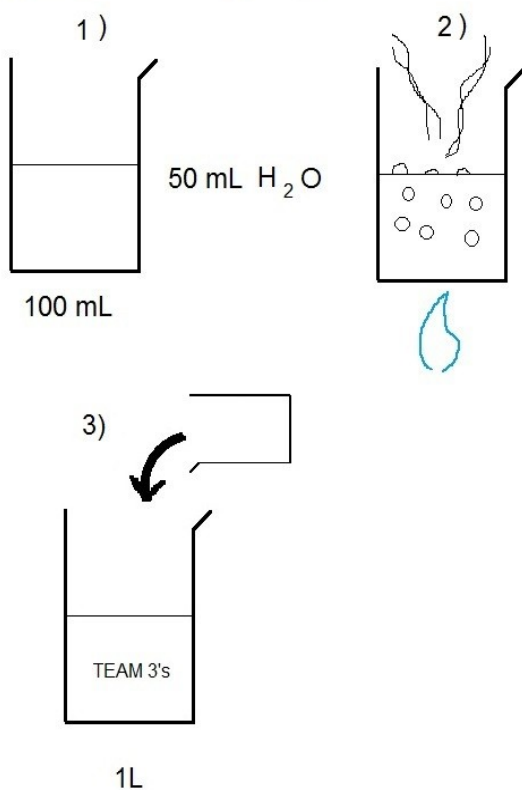
TEAM 3 (solution C- part 1)



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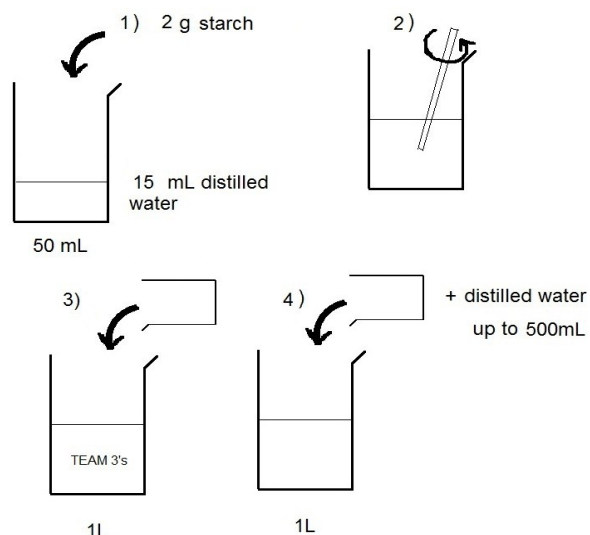
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## TEAM 4 (solution C - part 2)



## A chemistry experiment - and a game, *continued*

### TEAM 5 (solution C - part 3)



### ALL TEAMS

