

TEN TALES ON SYNTHETIC BIOLOGY

A POSITIVE VISION

Valencia Biocampus iGEM 2013



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TEN TALES ON SYNTHETIC BIOLOGY

by Valencia Biocampus team attending the 2013
iGEM competition.

Universitat de València

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BLURB FOR TEN TALES OF SYNTHETIC BIOLOGY

iGEM projects are generally about constructing things: software, hardware, wetware, art, and even communities. To this list we can now add words. Here the objective is to expand our thinking about how our constructions will play out in the world. Writers from the 2013 Valencia Biocampus team would like us to raise our eyes from the bench and the keyboard to consider just where all our efforts are headed.

The authors set out to explore both pessimistic and optimistic futures. Science fiction often manages to look only on the bright side, but *Ten Tales of Synthetic Biology* looks also in dark corners. Even the optimistic stories suggest a wariness of how new technologies – technologies that the authors themselves are inventing – will be used.

One story describes a cancer cure, arrived at only after a great cost. In another, open source biology provides energy and freedom to a world in which conditions have become so dire that only radical change can provide hope. Human nature at its worst shrugs off death of stranger and family alike to celebrate a proficiency at creating biological weapons. The message is clear: while scientists are beginning to demonstrate fairly sophisticated understanding and construction of synthetic biological systems, these stories serve to remind us that every light creates a shadow.

In reading these entertaining stories, one must keep in mind their origin. The authors display great enthusiasm for their subject with stories that, like all iGEM projects, were likely prepared during a period of intense work and insufficient rest. Occasionally the premise diverges quite substantially from the world as we understand it today. But then, of course, these stores are science fiction. Expanding one's horizons sometimes requires stretching credulity.

As Yogi Berra said “Prediction is very hard, especially about the future”, so did Alan Kay remind us that “The best way to predict the future is to invent it.” These stories are written by members of the next generation to invent the future; even where the edges are rough, we should pay attention to their predictions.

Rob Carlson

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WILL I BE OKAY ?

ORIGINAL IDEA *Alba Corman*

M

My name is David but everybody knows me as Dave and I am 10 years old. I am a normal kid but with a strange disease that makes me live having to be careful of absolutely everything I do. The illness I have has a weird name that only my brother and the doctor know how to say fast. Because of my disease I can go from suffering uncontrolled trembles to forgetting things that Alan has to explain to me again. Sometimes my whole body hurts and others it is hard for me to breathe. It is very unpleasant.

They discovered I was sick when I was 7 years old. While my teacher was talking, I just fainted. I woke up in the ambulance with my brother Alan on my way to the hospital. I do not remember a lot about that day, but one of the things I will never forget is the face of my older brother; he was completely pale and he seemed horrified. I have never confessed it to him but, before he noticed I had woken up, I heard him say out loud that he was afraid that it would be the same thing that took mom and dad away.

I did not before, and I still do not understand that sentence because Alan always said that our parents were on an island due to work issues that did not let them be here with us. Every time I ask him if they are coming back, he always says that they will not come back for a while. I am sure that when they come again we will be able to play in the yard like we did before I got sick.

Even though my illness makes me waste a lot of time in the hospital, I love doing a lot of other stuff. What I like the most is reading superhero comics. I discovered them during the week I had to be hospitalized to get some tests done due to my disease. To avoid getting bored Alan brought a bunch of comics from when he was little. There were a lot of Spiderman and Batman comics; however, my favorite ones were always X-Men because each of them had a different superpower that was useful and amazing.

When I grow up I want to be a superhero and help everyone who needs it in the whole world. Every time I tell Alan about my dream he says that with that idea I would be a great doctor or scientist. I do not like Alan's work nor Doctor Cronin's

because they can only help people in a determined place; I want to help the entire world at the same time. Nevertheless, people that are capable of flying or having super-speed do not exist, so I might end up being a scientist like my brother. The other day he told me about a thing called Synthetic Biology, or something like that, which in a few years might be responsible for...people with superpowers! Alan has explained to me that with this new science, investigators can actually give humans powers that only machines and other animals have.

After three days in a row in the hospital, today is a special day because Alan has told me that they I am going to try the first medical treatment based on Synthetic Biology. I'm sure I'll get some type of superpower! (Alan said that I am going to be the first person that has one).

My brother and Dr. Cronin had been discussing if they should try it or not for several days. I think she did not want to try it because it could be dangerous but Alan felt confident that it could actually work. I believe that if my brother says so, everything will turn out all right; he is the most intelligent person in the world.

A nurse has come in and started pushing my bed. She has taken me down a long corridor where I saw how thousands of white lights passed over my head. We have arrived at an operating room where my doctor had been waiting and Alan was watching through a glass wall.

I am lying down. A man that is behind me puts a mask on me while he says that I am now going to fall asleep but I have to count up to ten out loud. It is my moment to demonstrate how intelligent I am!

One...Two...Three...Four...

Silence.



I am concerned about my little brother. He is on the operating table because I insisted on trying the new treatment after discussing it with Doctor Cronin for several days. She has always been so traditional.

10-year-old David sees everything with different eyes; he believes everything works at a special rhythm full of magic where anyone can fly if they want to. He, having that magical vision of life, convinced me even more that he should try the new treatment. It is no life for a kid to be going to the hospital every day to get checkups to control if everything is still in safe limits, without even having the security of living till next day.

Seeing him there on the operating table makes me think about how he ended up like that and I cannot avoid remembering my parents. They both had a dominant mutation in chromosome 13 that made them suffer during their whole life making them get checkups and have doubts about their future. They always talked about how they had met when one of them was entering the doctor's office while the other one was leaving. The same disease that separated them from us was the one that joined them.



The Burroughs-King Syndrome affects a small number of people in the world but destiny ended up connecting two people that suffered from it and they fell in love. They decided to have two kids, Alan and Dave. Because they were heterozygous, there was a 25% of possibility that they would have a healthy kid. They were lucky with me, but David did not have the same luck; he had even worst luck than our parents because he received two defective copies that worsen the disease.

The disease is characterized by a multiorgan failure produced by the death of all type of cells, from neurons to epithelial. This is the reason why the symptoms can be similar to any degenerative disease, such as Parkinson or osteoporosis... any of them in any combination.

Both of my parents died the same year due to their disease. They had enough time to have children and enjoy them as much as possible. Hopefully, Dave could have the same luck but it was not likely; his condition at ten is the same as our parents when they were 35. That is, I doubt he has more than five or six years left.

I graduated in Health Biosciences to try and help my brother and my investigation group started their research about his disease. The idea was simple: create synthetic human cells capable of creating all types of compounds to avoid cellular death. Something like a miniature cellular doctor that when it detected that one of its patients was about to die, it would do anything it could to save his life.

During our research we found numerous problems, for example, if the cellular doctor's mechanism lost its control, the animal on which we were experimenting would develop a powerful tumor that ended up killing the animal.

But not even a year ago, we achieved our first positive results and today is the day in which we are going to try them on a human subject... my brother.

It has taken me several days to explain the complete surgical process and how it could actually work to cure Dave's disease to Doctor Evelyn Cronin. She ended up being a very close-minded person, more than I expected. She accused me of millions of things, including the fact that I only wanted to experiment with my brother to obtain recognition and money after developing an effective treatment against degenerative diseases.

I explained to her that to treat that disease we had to set several cellular doctors in different parts of his body so that they could supply all the cellular deficiencies that caused death. The ones that had to be installed in the lower body parts would not cause any problems in theory; however the problematic ones would be the ones that had to be installed in the boy's brain. That was the reason why we needed the help of a well-trained surgeon. Doctor Cronin is afraid that the body understands these new cells as an external hazard and that it starts to develop an immune response. This reaction would cause inflammation and it would damage Dave's brain. I am certain that this will not happen; I designed the cellular doctors from cells that came from Dave's body. It has to work.

The doctor finally accepted being part of the project with only one condition that I accepted without a doubt: if it did not work, she would be the one in charge of putting me



behind bars for irregularities in my research. There had never been any and she knew it. I know she made me promise this so she was sure that I was confident with my work, that I knew it was possible and that my motivation was sincere.

Dave was the easiest to convince about being subject of that surgery. I promised him that he would end up with superpowers like all the characters from the comics he loved. And the poor child did not doubt it; not even for a second. I thank his trust in me because it makes things much easier. It is like the fact that he still thinks that our parents are working abroad; it is better he believes this for the moment.

I am watching him there, so harmless and innocent on that stretcher. All the nurses, anesthesiologists and doctors around him are working to have everything ready. Doctor Cronin, despite the fact that she is the one with less hope, knows that if she does not at least try, Dave's life will only decline towards more unbearable pain and his death without even have lived 16 years.

The doctor has Dave prepared with his head held by a circular metal support while she tests the small circular saw. Once everything is prepared and the anesthesia is checked, she takes the metal instrument and starts the operation.

I really hope everything turns out fine... I want my brother to be able to pursue all his dreams.



Less than ten minutes are left for me to be with my little Dave. His brother Alan has a brilliant mind, very creative and full of wonderful ideas, but I still do not completely trust his ridiculous plan of introducing modified cells in the boy's body. I still do not know what I was thinking about when I accepted this surgery.

An illness like poor Dave has is one of the strangest things I have ever seen in the years I have been in this career. In the treatment prepared, there are innumerable variables and possibilities that everything ends up being a disaster. However, I have to say that if we just overcome a couple of rough patches, it could be considered an absolute success.

I cannot stop thinking about the revolution this could mean. Cells that would be created on purpose to heal a body from the inside, being capable of regulating everything on just about all kinds of diseases. I hope it works and it can be used in many more illnesses.

Alan, doctor in Synthetic Biomedicine. Before even considering his offer, I spent a couple of days studying his history. The truth is I was surprised with how faultless and excellent he was. I have to stop thinking about the scientist; all my concentration must be focused on the surgery.

All the process is recorded in my mind: while the rest of my team is in charge of installing the cellular doctors (what a stupid name Alan came up with) in the



non-critical places, I am in charge of the cerebral area. I have to install cells in five specific points.

I cannot say it is a completely crazy plan. All the tests showed that the boy had several brain spots in similar stages as patients with neurodegenerative illnesses of around 70 years old. His only hope to have a decent life depended on his brother's ideas, and on my hands.

So, there are four possible endings. The first one is that everything goes wrong and during one of the installations we lose the boy. The second one, that after taking the risk of operating on Dave, the cells do not have any effect and he ends up as if he had not undergone the treatment. A third option is that the cells' effect is different to that expected and for example he suffers from multiple tumors. And the fourth and last: success.

I see how the nurses bring him into the operating room. In contrast to what you see in adult patients, the boy is not scared. It is the very opposite; it seems as if he actually wants to be operated on.

The anesthesiologist tells David to count up to ten.

He has stopped on number four. I breathe deeply... it is my turn. I start securing the kid's head with a special instrument. I take the circular saw; I hate this instrument, it is really terrifying, I understand why they use it in horror movies. I check that it works and that the vital signs are correct.

I take the saw closer to the kid's head and I start to open his cranium so I can have access to the cerebral tissue. Everything is going as it should.

My work area is now completely accessible. I put down the saw and ask the nurse for all the necessary material to install the cells in the correct spots. Getting to the first place was not difficult and I put the first small innocuous capsule that will liberate the cellular doctors where it belongs. No problems for now.

I continue with the second spot and I manage to do it without altering any of the boy's vital signs. Everything also continues without problems with spots three and four. I start to feel that the procedure can be a success and that if the cells work, my little Dave will survive.

I make spot number five accessible and I put the capsule in its place. The small capsule loses itself under the cerebral tissue and I feel euphoric. We have done it. Or not.

The heart rate monitor goes crazy. I ask everyone to act as fast as they can while I try to find the critical point that has altered the boy's pulse. While I am trying my best, the monitor produces a constant sound and a straight green line. Completely straight; without one peak.

We try to resuscitate him with the defibrillator without any apparent success. My only and last hope is that manual CPR works.



Today was my brother's funeral. He is gone forever. I still cannot believe that I am never going to see him again, never again.

Nobody could have avoided Alan from dying. Those things are more or less common at his age. A heart attack, last night; Evelyn called me when she woke up.

In the funeral Evelyn cried for her lost husband while she buried herself in Bryan's arms, my nephew that had recently received his PhD in Synthetic Biology. Lucky Alan was able to see it; we are all very proud of him. His sister Alice was completely absent while she watched how her father's coffin descended into its hole. Alan had told me that Alice was achieving excellent grades while she studied Medicine.

When the ceremony finished I told them that now that they have lost their father and husband the only thing uncle Dave could do is be there for them for anything they needed. At the moment, tonight they will stay at my house so they feel safe and sound. My wife, Jillian, is completely comfortable with this. Alan Junior is also happy to share his room even though he is going through a rebellious phase as a teenager. My son and wife both know how important Alan was to me and I am sure they will try to help in anyway they can.

The house was already dark. Before I went to bed I wanted to make sure that Evelyn and the kids were okay in their room. I took a couple of more blankets in case it got cold.

When I was giving Evelyn a blanket she told me something I would never forget... 'I am not ashamed I listened to your brother when we decided to operate on you'. I did not know what to answer.

Now I am in bed, next to Jill, just thinking. Evelyn and Alan were the two people who saved me from a certain death around 40 years ago. If it had not been for them I would have never won the battle against that rare disease that attacked me when I was a child and that took my parents away.

In all the family meals they would always talk about how I almost did not survive the operation. Thanks to Evelyn's insane effort to resuscitate me I finally made it. Alan always said that that exact moment was the one that made him fall in love with Doctor Evelyn Cronin. I still remember how in the next visits to her office they would get closer little by little.

That period of time made my brother earn fame in the scientific world; diseases were never going to be the same thanks to his effort. The treatment with cellular doctors, which started with me, just kept on expanding and improving in different fields until it was effective against almost any illness. The best way to celebrate these achievements was with the engagement between Evelyn and Alan; it was great that the doctor became part of our family, even though she had already been acting like a family member since long before.

When I was a bit older I finally realized the risk they had both taken trying to give me a better life...and the best way to return his favor was doing what Alan



always told me to do: I became a scientist to try and help other people. A scientist like him.

I can feel how tears are rolling down my cheeks again. I am going to miss him so much. Alan was not only the best brother anyone could have; he was also the parents I had lost, the person who saved my life and the most important thing, he was the person who guided me to what I am today.

Alan always joked about the fact that I wanted to be a superhero when I was young. The day I got my PhD in Biosynthetic Sciences applied to health, he just said: 'You finally achieved your dreams; now you don't have anything to envy from any of the people in your comic books!'



KEPLER-62f

ORIGINAL IDEA *Jessica de Loma*

Lizzie was doing an analysis of pasta. She worked at The Smiling Granny doing microbiological controls on frozen food that the company manufactured. She had to make sure that all of the sets were clean without any sign of strange microorganisms that could give the company a bad name; a frozen foods company with more than 65 years of success. It all began with Edgar Mumford, owner of a small chain of grocery stores in the county of Cumberland. When freezers started to become popular, Edgar saw the opportunity to distribute frozen food.

That is how Mumford Frozen Foods was created, and soon due to its success, was bought by a famous multinational company that did not take long to change its name to something more family like.

Edgar's story of progression and success was just the opposite of the young analyst's. Lizzie, in reality, was Isabel. She was born in Spain and when she was



a small girl she loved things like microscopes and bacteria. Her dream had always been to dedicate her life to investigation and that is why she studied to become a biologist. But when she finished her degree, the country's economic situation did not have anything to offer. She looked for months only to finally realize that she was not capable of finding anything in her country of origin. Her final decision was to move to a different one.

She chose the United States for everything it represented: it had an excellent scientific panorama, as well as a very interesting culture and customs. This decision did not work out either. Upon arrival to the new continent the only job she found was as a food quality control analyst at The Smiling Granny in the Boston branch. She accepted the job since she needed money to survive until she found something better, and she was still there three years later. The only thing she was getting out of the experience was that she was learning the language and had a new nickname. Her co-workers called her "Lizzie" and she liked that.

Once again it was time to get off work. The days passed by endlessly without any sense due to the fact that they did not offer anything new or any type of challenge. The truth was that Lizzie felt extremely bitter towards a lot of the aspects of the scientific world. In her opinion, a lot of experiments that were performed had no relevance for ordinary people. She had the sensation that many scientists did not prioritize correctly the important aspects of an investigation. They let themselves be influenced by selfish things such as money, becoming well-known or simply found themselves guided by lines of investigation that were interesting to them but not to society. That was what Lizzie wanted: to offer the world a service.

When she arrived to her apartment, her roommate appeared just as she opened the door. Laurie was a student at Boston University. Her life was great; she was very



lucky indeed. She worked in a very prestigious microbiology laboratory thanks to her father, a very rich man that worked in the construction business, who subsidized the line of investigation where his daughter wanted to collaborate. Specifically, under the supervision of the brilliant microbiologist: Richard Blake. In spite of all of this, Lizzie learned to value Laurie.

– Lizzie, you have to see this! – Laurie seemed surprised. Laurie guided her friend into the living room where the large television, a gift from Laurie’s dad, was showing some very strange scenes. The scenes were of the migration of thousands of birds in different parts of the planet and of herds of large groups of animals on the African continent. They seemed to be fleeing from something.

Lizzie remained skeptical and tried to look for biological reasons such as the high temperatures that year. Laurie, on the other hand, quickly began to talk about conspiracy and H.A.A.R.P. project experiments for the mental control of living beings in groups. She was a fan of governmental secrets and she showed it openly. Lizzie was tired and did not feel like staying up talking about something that would probably have an explanation tomorrow. She got up off the sofa, said good night to Laurie and went to bed.

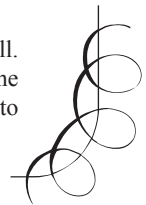


She got up early as she did every morning in order to start work. She needed to leave early that day since it was a special. Lizzie’s parents were arriving from Spain to visit her. After working for many years, her father had retired and now he had time to visit his daughter for the first time. Their flight should have left Madrid the day before and the girl would pick them up that same afternoon from Logan International Airport in Boston.

The day started out as always except for the fact that Adrian, one of the microbiology analysis managers, had not shown up for work. The strange thing was that he had not called in sick and he did not answer his telephone when they called him from the office. Lizzie liked Adrian. They had been together once but he was a distant guy and not very romantic who kept his distance due to previous bad relationships. He had always studied to become a microbiologist, but his career had been interrupted when he became an orphan. He had to quit studying and find work quickly in order to raise his younger brother and dedicate his life to taking care of him. Maybe Lizzie would stop by Adrian’s house on the way to the airport to see if everything was okay.

When her shift was over, Lizzie got into her small, second-hand car and headed for the airport. She had to go out of her way a little to get to Adrian’s house but she did not doubt one second. She wanted to see if Adrian or his brother needed something. She parked on the street where Adrian’s apartment was. She knew where he lived due to the fact that one Christmas after the company dinner party and a lot of alcohol they ended up spending the night together in his apartment. This had been the first and only “sentimental” relationship that Lizzie had in the three years she had been in Boston. Just as it had started, it flew away. In spite of the bittersweet sensation that this had left in Lizzie’s heart, she was able to let it go and suppose that the only relationship her co-worker needed was taking care of his brother.

She rang three times and received no answer. Then, she rang the neighbor’s bell. The neighbor opened the door and they both went up to Adrian’s floor. There, the neighbor, who was also his landlord, was complaining that he had not been able to



contact him to collect the rent that was due that day. Lizzie knocked on the door. No one answered. The grumpy landlord looked for a key in his pocket and opened the door. They entered the dark apartment. There was a certain sweet, but unpleasant odor in the air. – Adrian? It's Lizzie. I've come to see if you need anything. – There was no answer. –Is everything okay?

Then she saw them; the two bodies. Adrian had his work bag hanging from his shoulder and his brother had his backpack for school. They were on the floor with their eyes rolled back, purple skin and swollen extremities. Lizzie ran over to them to check their state. She started to cry when she realized that they were dead. There was no sign of violence on their bodies. It was as if they had both collapsed at the same time as they were getting ready to leave the apartment. While Lizzie continued in shock, the landlord took his cell phone and called the police.

The police arrived quickly and questioned Lizzie and the landlord. Lizzie asked a young police officer to please call her and let her know what had happened as soon as they had any information. She got out of that apartment as fast as she could and headed for the airport. She could not get the image of their bodies out of her head. She wondered what could have caused the death of two people at the same time and produce such a strange aspect in the dead bodies.

When Lizzie got to the airport, she still had an hour to wait for her parents' flight to arrive. She went to the cafeteria and ordered something to eat hoping to be able to get the image of the dead bodies out of her head. As Lizzie had her sandwich and orange juice, she watched television. There was a typical police series on where the officers break into a house dramatically and save a hostage. She could not hear too much due to all of the background noise in the cafeteria. Even still, she could see that the series had been interrupted suddenly to give a news flash. It appeared that dead bodies were being found in different parts of the world. All of the bodies were swollen, purple and with their eyes rolled backed. The news reporters described it as a pandemic. From what Lizzie heard on the news, the best investigators were already working to discover the cause.



Lizzie was in the waiting area. She was frightened about the news she had just seen. While she waited behind the huge glass window, she received a message. It was from her mother saying that the flight had been canceled due to the pilot's death minutes before the plane was about to take off. They had been retained on the plane for ten hours until the cause of death had been declared as unknown and afterwards they were allowed to get off the plane and use their telephones. The message said that it would take the airline company a couple of days to arrange new flight dates. She would have to wait a bit longer to see her parents.

After reading the message, Lizzie was watching the runway trying to think of what to write to her parents. Lizzie wished she had not been looking in that direction. Flight 815 flying in from some Pacific Ocean was getting ready to land when the left engine went into flames and blew up. The explosion caused the loss of the wing and the pilot lost control of the plane. The plane was heading for the runway too quickly and the passengers aboard knew their destiny.

The girl watched in shock as the plane touched down in an almost vertical position creating a huge ball of fire. Thousands of eyes watched from behind the



terminal windows. People started wondering about the cause of the accident. They debated if it had been due to a human or technical error, a bird in the turbine or a terrorist attack. All of the theories fell to pieces when another airplane crashed as the first one had. And then another one. And three more. It was a nightmare. This could not be happening, Lizzie thought.



It took her seven days to begin to come out of the black hole in which she found herself trapped. Lizzie had cried all of the time that she had been awake. She was happy that her parents had not flown in, but she still was not capable of comprehending what she had seen. During the past few days the world seemed to be going even crazier.



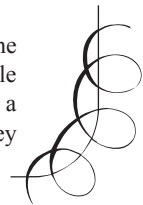
All parts of the world turned into a dangerous place where it could rain fire. The day of the accident, the same thing happened in practically all of the airports in the world and there were also cases of airplanes falling directly from the sky into cities. After that, all air and maritime transportation was canceled for precaution. Soon after, public transportation, like the subway, was also stopped due to three accidents following the same pattern as those of the airplanes. The experts could not find an answer for the repeated incidents. They could only be understood as terrorist attacks, but no particular country or region had been targeted.

Complaints against electrical appliances that did not work correctly began to go through the roof. Shopping centers and specialized stores had thousands of returned products since the buyers were not even able to turn them on. Cell phones, mp3 players, and other audio devices lost their sound leaving only a background noise that sounded like a radio that was not tuned in completely.

People continued to show up dead in their homes or they fell to the ground while they were shopping, walking or doing sports and did not get up again. Always with the same characteristics. Lizzie followed closely the advancements of the topic. The most prestigious investigators and doctors of the planet observed that every cadaver had the same thing in common: a complete paralyzation of the circulatory system and enlargement of the blood vessels causing swelling. Besides that, the brain tissue appeared to be completely unstructured.

But the strangest thing happened on the seventh day. The entire world went dark for half an hour. All electrical appliances stopped working. There were countries that went through it during the day and they felt a general blackout. In the countries where it took place during the night, thousands of people could see how greenish lights floated over the main cities with flashing movements. The best engineers in the world assured that there were not any man-made machines capable of carrying out those kinds of movements in the air. The lights were also undetected by any type of radar or state-of-the-art military detector.

Lizzie was finally able to clear her mind a bit after hearing the latest news. She sat at her computer and looked for information. On the internet there were people who believed in the Drake equation, affirming that they must be UFO's and gave a lot of arguments in favor. Besides that, other people on the web were saying that they



had been abducted and subjected to different experiments. The conclusion was that the line that separated what was real from the X files was very fine. What practically 100% of the population agreed upon was that we were not alone in the universe. It was a historical event and she was living it. Lizzie was very ambitious when it came to knowledge. She needed to know everything possible about the topic. She read about the SETI projects and about how they had not obtained any definite results. She learned all about the famous cases such as the Shag Harbour incident and also about the Fermi paradox. She was passionate about the topic, maybe because it was helping her get through everything that had happened that week.

While she was surfing the web, she started thinking about something: the extraterrestrials had appeared in the same period of time in which the Earth had started to fall to pieces. It could not be a coincidence that the aliens had appeared at the same that people were dying, electrical appliances quit working, transportation was failing and animals were migrating in unknown ways. The people who truly believed in the presence of intelligent life on other planets thought that their objective was aggressive and colonizing.

She finally turned off the computer. The girl was letting her imagination run wild with a bunch of crazy ideas from the internet. She needed to stay focused. There was no real proof that extraterrestrials existed and that they had anything to do with what was happening. She went to bed to get some rest and to try and get the bad memories out of her mind.



Lizzie woke up at midnight. She had had a terrible nightmare. She was having a lot lately. She went to the fridge for a glass of milk. She picked up the remote control and turned on the small television that was in the kitchen to see if there was any updated news. She was about to take a drink of milk when it happened again.



All of the electrical appliances in the world went off leaving the world completely dark. The green lights appeared again, but this time there were more. But it did not end just there. All of the screens on Earth started to emit a message of white letters on the black backgrounds. Clicking and the sound of metal hitting metal could be heard. The following could be read on all movie theater screens and on all computer, telephone and multimedia devices:

Hello, inhabitants of the Earth,

We have been witnesses of your evolution and how you have evolved into the dominant species on Earth. Now we know you better than you know yourselves.

We are beings composed of carbon and we need to live in a planet with the same composition as yours, almost exactly like yours. Our planet of origin is Cartia, which you know as Kepler-62f. It is contaminated and almost completely destroyed because we have not taken care of it. The atmosphere has become toxic due to an excess of carbon monoxide and our inhabitants are being poisoned and dying. We only have little time left before our planet collapses, but you learn from your errors and the same thing will not happen again. Now we need a new place to begin from scratch and Earth is the ideal planet.

We are sorry to inform that you do not fit in our future plans. The destruction taking place these days is part of the plan of clearing you from the planet. You probably wonder why we cannot all live together and the answer is that our population alone requires all of the resources for survival. The Earth is smaller than Cartia and we will need the space you occupy and the resources that you are running dry. Besides, we suspect that you are not willing to share.

Do not waste your last moments trying to fight us. The weapon we have designed to destroy you is working as planned. We are familiar with every machine made by man and have designed mechanisms against all of them, for example the one against your airplanes which works perfectly as you can see. Little by little you will disappear.

Enjoy your last days on Earth.

The glass of milk crashed to the floor. Lizzie stood there with her mouth hanging open until the lights came back on. Laurie came into the kitchen with sleepy eyes. The noise of the breaking glass had woken her up. First she asked what had happened, but an answer was not necessary because the television was already giving a special report. The conclusions that the newscast had come up with were depressing. Some experts were looking for a solution, but a lot of them had already decided to give up because they did not know when their loved ones could be victims of an attack.

The two girls talked about the extraterrestrials until the Sun started shining in their apartment. They discussed various aspects but both agreed on the same thing. First, there was not any possible justification that would give the aliens the right to eliminate the Earth's population. Second, they would not just sit there and wait for it to happen. They were going to look for a solution. They both analyzed the message from the Cartians. It was selfish and showed no empathy toward the human race. The extraterrestrials had turned their planet into an inhabitable place to live and now they wanted to go to another one as if a planet could be used and tossed out. During the analysis they looked for information that would allow them to deal with the threat that they had before them.



Lizzie was the one who realized the two most important points of the message: An uninhabited, contaminated world and that the extraterrestrials stated that they knew every imaginable microorganism. With these two points, the young food analyst, after a couple of days, came up with a possible solution. Now she needed to discover how to put it in to practice.



The governments of all the countries agreed to cooperate with the objective of creating a “Committee of Extraterrestrial Threats”, the C.E.T. This way they would be capable of making decisions in the shortest possible amount of time and always under international consensus. A group of specialists in every field, military minds and politicians formed the C.E.T. The meeting place, due to its technical resources, was the Massachusetts Institute of Technology, known as MIT, in Boston. More specifically, it took place in an underground construction located under the Charles River. This was one of the security measures taken in order to assure that the Cartians would not have any knowledge of the decisions being made.

Among the microbiologists in the group was Dr. Richard Blake. His mind worked at high speed, thinking about how they could fight the Cartian beings. He spent various hours a day in the armored lab under the river provided by MIT. There he discussed different ideas with scientists of all fields with little hope of a solution. The military experts and engineers looked for a way to attack the Cartians with some type of missile or high frequency wave, without even considering how they would be able to find them. The political scientists wanted to strike up peace talks, while the leading bioscientists wanted to study every detail of the biological characteristics of this new alien species. Not one solution was feasible since everyone knew that the Cartians were always one step ahead and would always be ready.

Since Blake was not coming up with any positive results in the secret base, he worked in his private lab in downtown Boston. The biggest inconvenience was that since his investigation was confidential, his students could not work with him and that made his test results slow. During one of his experiments someone knocked at the door and he hurried to ask who it was.

– Hello, Dr. Blake. It’s me, Laurie. – She was one of his employees. A young, intelligent, hard-working girl, who also had a rich father who financed many of his requests. –I’m here with my roommate, Lizzie. She thinks she has found the solution.

Upon hearing this, Blake immediately opened the heavy glass door to find his student and a girl a few years older than Laurie. What surprised him the most was the look of determination that he could see in her eyes.

–Hello, Doctor. It’s nice to meet you.

Lizzie started to tell the doctor about her project. He thought that the idea was great and they quickly got to work to see if they could achieve the results they were after. They worked against the clock since any one of them could be a victim at any time. But they were lucky and after four days of continuous work, they got it.



Richard Blake drove Lizzie and Laurie to MIT. They were going to show their results to the C.E.T. and the two young girls deserved to be present. He entered the



main building and walked towards the underground base where he had to access a special elevator by the means of an eye scanner and an alphanumeric code. Once below, they took a jeep through a long, dark tunnel until they got to the base. The two friends rode along surprised and a bit frightened even though Dr. Blake had warned them that what they were going to see was worthy of a science fiction movie. But to tell the truth, if extraterrestrials did exist, the secret base completed the recipe.

They arrived at the base and asked to quickly organize an international meeting. The meetings took place in a semicircular room where all the members could see one another and there was a large screen on the side where the presidents of the leading countries appeared via teleconference. In five minutes each one was in his place. Lizzie noticed that a few places were empty and Blake commented that it was due to the fact that they had been victims of the Cartian attacks. After that, he began his speech.

–Good afternoon, my dear colleagues. I bring you the solution, from the hand of this young lady, Lizzie. – The sentence was so direct that it caused commotion in the room. –Her idea is simple: bioremediation. This young lady has thought that through Synthetic Biology we could create a bacterium that would clean the atmosphere of Cartia so that the extraterrestrials wouldn't have to "steal" our place. They would simply have to clean theirs.

Everybody in the room was astonished. It was a great idea that could actually work. It prevented war and conflict and they were giving the Cartians a solution.

Lizzie started to talk. She had a briefcase where she was carrying the new bacteria that they had modified a few days before.

–We have been working hard and in the end we have a stable and efficient cell line. – With this sentence Lizzie got rid of all of her nervousness. –It's a bacterium capable of eliminating carbon dioxide and other toxic gases from the atmosphere and afterwards it is capable of liberating oxygen in order to adjust the concentration to maintain vital levels. The only thing the Cartians would have to do is spread this bacteria in their seas for it to begin to grow and expand while it purified the planet.

–How could that work? – asked one of the scientists. – What if the exact conditions of their planet are not the ones we are imagining?

–In Synthetic Biology there is something that exists that we know as 'biological standard pieces. These allow the modified organisms to adapt to pH conditions, temperature and pressure in a wide range. –Lizzie hoped she had sounded convincing.

The experts looked at it with certain skepticism in spite of the fact that it had been the best solution suggested up to the moment. Hope started to fill their hearts once again and little by little people started to imagine they could actually achieve it. They only had to get the bacteria to the Cartians and everything would go back to normal. Before that, they decided that they would perform higher scale experiments during a couple of days to make sure they had possibilities with the young woman's bacterium.

Everyone agreed that Blake and Lizzie were the best choice to deliver the bacteria to the Cartians. The delivery plan was based on leaving a message on all of the pages on the internet and broadcasting on television and radio during 72 hours with the hope that the Cartians would read or hear it on one of their information controls.

"Cartians, we know how to recuperate your planet. We have created a synthetic



bacterium that, through bioremediation, is capable of reestablishing the balance of Cartia simply by cultivating it in your seas. You can pick it up tonight at midnight in Killian Court in front of the Maclaurin building in MIT in Boston.”



When there were only 30 minutes left till midnight, thousands of people gathered around the MIT waiting for the Cartians to pick up their salvation and leave them alone forever. Television reporters from all over the world were there to cover the news. People were everywhere except where the pick-up point had been arranged. Only Blake and Lizzie, with a briefcase in her hand, were situated in this point. Inside the briefcase was a bacteria culture in high concentrations, a manual for its use and a replication protocol in case they needed to modify the bacteria again.

At midnight the lights on the planet turned off again. But this time, only one green light appeared in the sky. It was over Boston, in front of one of its most emblematic buildings of the MIT. Blake and Lizzie felt like they were in the center of the universe at that moment. They were watching the light over their heads when a beam of light shined upon them. It was so bright that they could not see anything at all. And there, the Cartians spoke directly inside the heads of Blake and Lizzie:

–We have received your message. We will take your bacteria. We will try and make it work. – The voice had a certain virtual tone. It must have been passed through an electronic translator. –If it works, you will never hear from us again. But if it does not, we will continue with our plan to clear your planet.

When the green light disappeared and the lights of the Institute came back on, the briefcase was no longer in Lizzie’s hand.

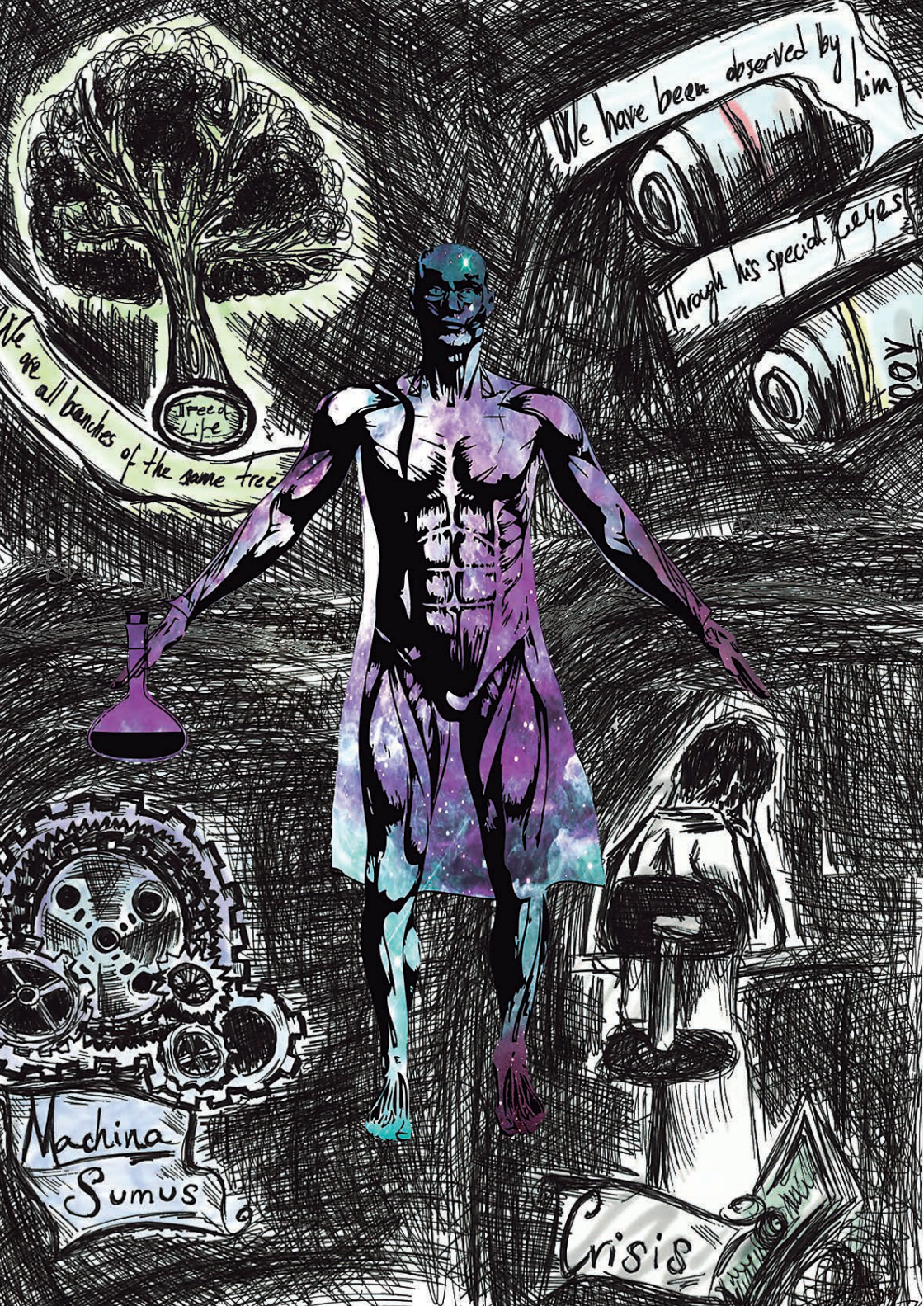


A year after the “Cartian incident”, the planet had changed radically. The world began to value its existence in a different way. We were no longer the kings of the Universe. Science grew as the new pillar of society, considered to be a tool to assure the well-being of people. Synthetic Biology had just taken off, turning into one of the main scientific branches with the laboratory of the doctors Richard and Lizzie Blake at the head of Biosynthetic studies. For example, the same bacterium created to solve the Cartian incident was about to be used on the planet Earth with the same intention of eliminating part of the damage caused by the Greenhouse effect. Nobody forgot that a conflict at a galactic scale had been resolved with the simple idea of modifying an already-known organism.

As Lizzie left work that day, happy she had the job she had always dreamed of, she remembered she had to make an appointment for her next echo. This one was special because her friend, Laurie, was going to accompany her. While she was looking for the doctor’s telephone number, the screen went black and a brief message appeared that made Dr. Lizzie Blake smile:

“It worked. You not only returned hope, but also life. Thank you.”





We have been observed by him

Through his special senses

We use all branches of the same tree

Tree of Life

Machina Sumus

Crisis

CHRONICLES OF OUR ORIGINAL IDEA *Samuel Miravet* EXISTENCE



ur story goes back millions of years ago, to a time the historians know as ‘The Dark Millennium’. During this period He had still not appeared in our lives to bring salvation, so the world was very different to what we know nowadays. In that inhospitable setting of death and destruction, we appeared by a quirk of fate.

During ‘The Dark Millennium’ our ancestors had to survive in a wild and violent place where the laws of evolution decimated part of the population. Anybody could be born and the next day, die without anyone even noticing our existence.

The differences between that past time and the present are innumerable. We lived in adverse conditions; sometimes we died due to extreme temperatures and other times we just froze to death. Bigger predators would devour us when our only objective was catching something to eat from the sea; we were always cold or hot and we had to look for our own food by ourselves. But nowadays, we have all gotten used to His kindness and His omnipotence to fulfill all the needs we can possibly have.

Amongst all the chaos, the law of the fittest prevailed. Our ancestors were not even capable of maintaining any type of registry from that obscure period of time. Once He appeared, He started to analyze us in detail until He was finally able to discover the first moment in which life started on our planet. He was able to go back in time and discovered our first steps in the universe. What He found out was shocking: we all have a common origin, that is, as the branches in a tree end up growing from the same trunk, we all have a common ancestor.

The ‘trunk’ was based on a chemical composition similar to ours, even though it would probably have a different genetic structure. A lot of us are collaborating with His investigations about the origin of life and every day new achievements are made in this field. Thanks to our invaluable collaboration new information is discovered, for example life could have worked with ribonucleic acids before deoxyribonucleic acids or we could even uncover which are the minimum genes required to say that an organism has life. All this matters to us because it means that we could understand part of our history and that way comprehend our identity as individuals on Earth.

Our God is not only interested in knowing our starting point, but the rest of our lives up to now also interests Him. Knowing the evolutionary progression that has

defined us how we are today is a revision of everything we have lived as a species. Studying our origins and evolution means that we can avoid future tragedies and that way we can keep on living under the protection of our God for many more years.



He came on the scene initiating 'The Golden Era'. Nobody knows His origin for certain but what is clear is that He meant a turning point in our existence.

The theories about how this God appeared are many and at first sight, they are all consistent. Some think that His origin is just circumstantial, this is, our ancestors lived in absolute chaos and for this reason a new figure capable of organizing us appeared out of nothing. Others think that He is just an individual like us but that has reached a different level of evolution. This means that we stayed at the same point, something that does not mean that we are not progressing, while He continued evolving at an unimaginable rate until becoming what He is nowadays.

In spite of everything, His origin is what matters less. What I am going to try to explain is the radical change his appearance supposed, but before starting I shall leave something clear: There are more superior beings (than us, not Him) that could possibly be like God but that ended up developing other labors in the world. We know they exist because we share spaces with them and many of our tasks are for them. What made Him different from the rest was his dedication and His complete service towards our necessities. Besides, you cannot understand God as an individual figure; He is everywhere so He can take care of us in a personalized way and help us all at the same time. This omniscience is just another thing He is capable of doing and that only strengthens the idea of his unlimited power.

When He appeared in our day-to-day, advantages were almost immediate. The first contact was qualified as frightening amongst my ancestors that from then on would refer to that period as 'The Kidnap'. Supposedly, He appeared and started to try and 'hunt' us and lock us up. The name full of evil that was given to this era makes sense if you consider that we were all used to surviving on our own, but we had never been locked up before. All the stories from this period narrate how He tried to find all the variety that made up our society and He stored them, with a destructive purpose as it was thought at the beginning. But it had nothing to do with this; He took care of us and started to study us one by one, separately and in a personalized way with the objective of giving us what He thought would be best for us. Like this, our new life without problems began; it was paradise.

He proved to be capable of controlling absolutely everything that surrounded us. What seemed to be at first sight some kind of exclusion in which He isolated you from all you had known before and took you to an unknown world He had created, ended up being free holidays for a lifetime. The place He had given to us had, and still has, a composition rich in everything we could ever need so



that we never lacked food. The variable temperatures stopped being a threat for our existence: if it was too hot, God would cool us; if it was cold, He increased the temperature. In the end He got to know us so well, He allowed us to live in the ideal temperature we needed so we could be as comfortable as possible. This same thing happened with all the other variables you could imagine. He could manipulate everything, absolutely everything; therefore we could always live in perfect conditions. In fact, another example of his divine power is what other companions talk about: they have discovered new populations that cannot tolerate darkness or others that have learned to live in inhospitable places (to avoid evolutionary death amongst other risks) and that also ended up under the Almighty's supervision. Because of this, He has given them all that they need so that they can carry on with an easier and less offensive life in spite of their special conditions.

In return of all those advantages we only received more. God came to understand us so well that He was capable of evolutionarily interconnecting all of us giving us a new perspective of family we never had before. In addition, we realized how worthwhile collaborating could be and thanks to our efforts to give Him all we are, we reached a new level of comprehension never achieved before and that nowadays we can find it in our history under the name of 'The Revolution'.



There are thousands of questions about how God got to notice us. Or He discovered us due to the 'Black' or He found us by accident.

At the same time we started living in our 'Golden Era', certain individuals born to harm our Caretaker were discovered. And nowadays they still exist: the 'Black' or the 'Murderers' of the different forms that He can have and all the other similar beings that surround Him, but are not at His level. What these individuals have against our God is the simple fact that death has to be present in our lives. It is true that in some moments He seems to forget us and part of our population is destroyed, we even suspect that He is the one who controls this destruction. But we do not see this like something negative, like some radicals against Him think; not at all. After these brief periods that resemble 'The Dark Millennium', He gives us new lands where we can keep having our children and see them grow with the food He gives to us again. It is a type of purification process.

Getting back to the 'Blacks' subject, nobody has ever been capable of knowing what the order of the discovery was: if He noticed us after the deaths some of us provoked or if after knowing us, He connected it. What there is no doubt about is His kindness: despite all the harm the 'Black' caused, He did not reject studying them and offered them a new home. With this He showed us to be kind to our enemies.

Thanks to His infinite knowledge, God managed to find a solution to the problems caused by the 'Black'. We, the good ones, gave Him the products He needed to reduce the effects of the illnesses. Basically, a product we used for our



everyday tasks ended up being the solution. He expressed His gratitude towards us directing an enormous effort of his Almightyness to taking care of the ‘Producers’. These ‘Producers’ became the best-paid workers and had the best opportunities. Once again, God demonstrated He was grateful and thankful for everything He obtained from us.

After ‘The Golden Era’, the ones who remained faithful to His side and tried to collaborate as much as possible, were the most benefited during the next period: ‘Machina sumus’.



We started to experience the rewards of our loyalty during the current period. It all started when myth and reality came together. First, we received news from the outside about new individuals capable of working as machines. For example, some of my colleagues assured they had been in places shared by individuals capable of emitting light or of creating strange unknown substances that God recollected to, as He said, to lengthen His existence in our world.

And it was not a myth; one day it was our turn. He came and it seemed as if He was torturing us: He took entire families and put us under extreme conditions that weakened our physiology with chemical compounds and even with electrical discharges. It was harsh and some of us never passed that transformation test.

The ones, who finally made it, were rewarded with powers never imagined. My family and I got the ability of producing new materials. But that was not it; others received the ability of talking with God through light, cleaning impossible contaminants and some were even capable of controlling the behavior of animals. He raised us to the condition of biological machines; He gave us power.

When we had power, our lives radically changed. From that moment, extraordinary became normal for us. We started working in an even more efficient way and because we were even better ‘Producers’, He took care of us with more interest and gave us even more rewards. It was wonderful knowing we were part of a bigger chain that balanced the universe. All of us, as a family, were God’s right hand.

The ability of transforming us in machines meant that His creativity could create and convert the impossible in reality. He used us as a tool to make His dreams come true. As a result of this, our proliferation and life quality increased even more. God showed us that He had created a ‘Science’ where the limits between the inconceivable and reality did not exist.



During the thousands of years we have been working with Him, we have heard all His conversations. One that always seemed peculiar was when He talked about something He knew as ‘Religion’. It is said that an entity superior to our God exists, that He rises to the category of Almighty Being; something like God of the Gods. We never got to understand Him. For us, bacteria, our only God is Him, ‘The Scientist’.

For example, now we are in a period called ‘Crisis’ in which it seems that God



is not kind anymore. But we cannot look at it in the wrong way. It is not His fault; He is the only one who keeps on fighting for us every second of His existence. He manages to use His infinite power to get the best of us and offer better lives for the other beings that live with Him. We should all know that a great part of the well-being we enjoy and a lot of the comforts we have, have been created by Him; these are some of the reasons why we should all support Him.

Maybe, something superior created all of us at the beginning; it could be. But for us, that God of Gods is no better than 'The Scientist', because He was the one who abandoned us without any type of help in the verge of death during 'The Dark Millennium'. However, our God did help us providing us with peace, security and faith thanks to His miracles.







Doctor Mage was showing the final result to his two students: the synthetic *Megium benigna*. After ten years of hard work, Megan and Thomas were the only two people who were aware of how much effort it had taken this man to carry out this project.

– Dear students, I think we have finally done it. I would have never done it without your help.

– It's not that big of a deal! – said Megan, the less confident one of the two. – We didn't do that much.

– Don't be so humble, guys. Your help has been essential. – Mage spoke with sincerity and pride, almost like a father. – We finally have the plant that gives a fruit capable of preventing cancer and of curing it. The only thing left is trying it on humans after passing the controls on cell models and animals.

– I can see a Nobel! I hope you remember us when you are at the top of the scientific world. – Thomas was the dreamer of the team, which provided a creative mind perfect for carrying out science.

– I wish, Thomas. – The doctor took one of the pieces of fruit and started to take it to his mouth. – I have to tell you guys, that the first human subject of the test is going to be...I owe it to her.

Suddenly the doctor turned white and fell to the floor. The students were not even able to get close enough to him before falling in order to avoid it. The *Megium* fruit rolled along the floor away from the doctor's body.



When the paramedics arrived at the lab, it was too late. The sanitary personnel explained to the young students that their boss had died, for the moment, of unknown causes.

The students felt disconsolate while Megan hugged Thomas trying to hide her tears. They tried to imagine what could have happened to cause a healthy man to die so suddenly. Even so, the two greatest doubts that were still up in the air were: Why was he going to try the fruit himself and to what woman did he owe something?

The doctor had never been married and did not have any children. Maybe he was referring to his mother or to a good friend, thought Megan. As for the first question, there was only one answer: he had cancer. Neither one of the two students could understand why he would hide something like that.

At the end of the day the two students received the confirmation of their suppositions: Doctor Mage had died from a very aggressive cancer in an extremely advanced state and no treatment would have been effective.

Thomas and Megan felt destroyed with the revelation and the only thing that made sense at the moment was going to bed to wait and see if they felt a little better tomorrow.

– What are you going to do tomorrow? Are you going to the lab? – asked Megan.

– Of course. We have to finish the investigation.

– Okay. – The young woman's face was a combination of pain and exhaustion.

– Do you know what? Mage was the dad I never had...I don't know what I'm going to do without him.

– I'll help you with whatever you need. – assured Thomas. – You lost a father... but not a friend who loved you as if he were your brother.

The young man walked his classmate to her house. Neither one dared to say anything during this silent walk home. When they arrived at Megan's house, they said goodbye with a hug, both of them holding back their tears. Before all the pain came flooding back again, Thomas let go and started walking down the street to look for his car.



The next morning Megan and Thomas met in the lab ready to start the experimental phase on humans. They had a lot of work ahead of them: they had to find willing subjects, both sick and control groups. It would probably still take them about a year.

– Thomas, can I ask you something?

– Of course. What is it?

– Don't you get the sensation that everything we thought we knew about Mage just disappeared over night?

– Yeah, I thought about it last night before I went to sleep. The person that I thought I knew suddenly became a stranger to me.

– I don't feel comfortable working on something that has to do with a stranger.

– It was difficult for Megan to say these words. – I think before we continue we should find out who Doctor Mage really was.

Thomas and Megan agreed that they would not feel good about themselves until they resolved the mystery about their boss. Maybe it was just an excuse to get their minds off of their boss' death and take the time they needed to get the strength to continue with the investigation. If this were the case, at least they would solve some unanswered questions.

They made a plan in which they decided the first step would be to try and talk to some of the doctor's friends and this way see if they obtained some useful information.

Megan began looking for information on the social networks and the Internet about people who were associated with the doctor. It was surprising to discover that he did not have photographs with anyone, that he did not have any added friends, or that he did not share any hobbies other than work.

When she explained this to Thomas, he thought that the best thing to do would be to go to the doctor's house and see if some neighbor had heard or seen anything interesting.

To find out where he lived, they had to ask the secretary in the investigation institute where the laboratory was. When they had the information, they decided to go that same morning.



Thomas parked his car in front of the building where Mage had lived. Before they got out of the car, he decided to ask Megan:

– Are you sure you want to do this? Once we start, there’s no turning back... we’ll have to get to the bottom of the matter and maybe we won’t like what we discover.

Megan answered with a simple nod of her head. You could see the curiosity in her eyes but at the same time you could see the fear of the unknown. After that crucial moment in which they decided to go ahead, they got out of the car and went to the building’s main entrance.

First they rang the doctor’s doorbell, and as expected, no one answered. Then they rang Mrs. Genovese’s doorbell, and this time they were lucky.

When they said they were there on the doctor’s behalf the woman did not hesitate for a moment to open the door. As they went up in the elevator to the eighth floor, Thomas and Megan felt slightly excited about what they could discover. They did not even have to open the elevator door. Mrs. Genovese was waiting there to do it for them. She invited them into her apartment for coffee and cake.

– Hello, youngsters. I’m Catherine although people call me Kitty in spite of my age. –she said, laughing. She was a woman close to 70 years of age, but nevertheless extremely jovial. The students liked her immediately. – I’ve seen on the news that the doctor has passed away due to cancer in a terminal phase. I’m so sorry. Were you students of his?

– Yes. I’m Megan and this is my classmate, Thomas. We both worked in the lab with the doctor. – Kitty looked at them with the affectionate look of a mother, or rather that of a grandmother. – We have come to ask you some questions about Mage.

– Of course. I’ll answer everything possible.

– We’re looking for someone close to the doctor, someone who can tell us if he was married or if he had any close family. – explained Thomas.

Kitty explained that Mage moved into the building nearly ten years ago and what she found out back then was that he was working in a laboratory in a neighboring city. From the beginning, the doctor was hardly ever at home and had a strange schedule, sometimes not even coming home to sleep. From what the doctor had told her, he stayed up all night long working in the laboratory. He never took women home and he never received visits.

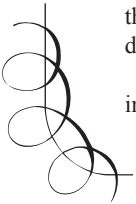
The students appreciated the information that Mrs. Genovese had given them and they also appreciated silently how curious a bored woman could come to be.

They said goodbye to the woman and left. They both knew what the next step would be: go and talk with the doctor’s coworkers. Maybe they would find out what had made him change cities ten years ago.



After spending the morning with Mrs. Genovese, Thomas and Megan decided that in the afternoon they would drive over to Mage’s old workplace. They had to drive almost two hours in exchange for a possible answer.

They started the journey and after an hour they stopped to have something to eat in a highway restaurant. Thomas ordered a huge hamburger and finished it with a



great appetite while Megan pushed around a few pieces of lettuce on her plate from her salad; she still had not recovered from Mage's death.

– You should eat a little more, Megan...we need energy.

– I know...but I still can't figure out why Mage would hide his illness from us. Didn't he trust us enough?

– Don't think like that, Meg...he probably just didn't want to worry us.

The explanation did not seem to convince the young woman, although she ate some more salad, making Thomas feel better.

They got to the modern investigation building early in the afternoon. At the reception desk they were indicated how to get to the secretary's office. Once they got to the office, they knocked on the door and asked if somebody that had shared a position with Dr. Mage was still working there. And yes, there was: Dr. Walter.

– Hello, Dr. Walter: I'm Thomas, a student of the recently deceased Dr. Mage. This is Megan, my classmate.

– Mage has died? – The doctor's face turned dark and sad. – I had no idea...

– We are very sorry. – assured Megan. – Were you very close to him?

– Yes... well, I was, ten years ago. I was the first graduate student that the doctor had. We worked together on bacteria capable of treating cancer. We obtained positive results with animals. – Thomas and Megan were surprised to learn that there had been something positive before *Megium benigna*, but they did not understand why the results had not been published. – He was a wonderful investigator.

– Why wasn't the investigation ever made public? – asked Megan.

– When we started testing on humans it was a disaster. The volunteers showed no improvement and some of them ended up dying anyway. Mage couldn't get over the failure and one day he just packed up and went to a different laboratory with less salary and privileges. Nobody understood why.

They finished their conversation with a polite goodbye and the idea that something must have happened to cause the doctor to leave so suddenly. The last piece of information they got was the doctor's address in that city. They would go immediately to see if they could discover anything else.



Megan and Thomas got to the address of where the doctor had lived previously. It was a small, two-story construction similar to those around it. The difference was the yard. While the neighbors had nice green grass and flowers of various colors, the doctor's yard was a jungle of weeds where the predominant colors were brown and grey.

They tried to contact the neighbors without any luck and the two of them decided upon a drastic, but useful solution: they were going to climb over the fence.

Thomas helped his classmate jump over the fence and then he jumped over as well but with certain difficulty due to the fact that he wasn't as athletic as he was a few years back.

Once they were on the property, they went towards the door and as they expected, it was locked. It was Thomas who thought of going in through the back door and there they were lucky. It was open.



The house was decorated in a classical yet timeless style. The walls were covered with landscape and still life paintings that gave an even more traditional appearance to the rooms.

There was not anything of great value apart from the paintings (and they would not be worth a lot, thought Megan). Thomas decided to split up in order to check out the house more quickly. While Megan inspected downstairs, he investigated upstairs.

Megan finished her part of the house without any luck, which was not Thomas' case. They got back together in the foyer and he showed her the new clue: a photograph in a gold frame of the doctor with a woman, a very beautiful woman.

Megan turned the photograph around over and over again looking for a name. She did not find anything. Her last hope was to take the photograph out of the frame and there it was. The photograph was signed on the back with two names: Mage and Tess with a date ten years ago.

The two students decided that it was too late to try and find out who the girl in the photograph was, so they went to a motel in the city to get some sleep. The next morning they would go to the register office in the city hall to look up information about Tess. When they tried to get separate rooms, the man at the motel desk told them that there was only one room available. They would have to spend the night together.

Thomas had never looked at Megan as anything more than a simple classmate. That sensation had disappeared in the last two days. He had begun to see her as a fragile being that needed someone to take care of her and Thomas saw himself as the best candidate for the young woman.

Upon opening the motel room, they found only one bed. Megan seemed to blush at the opportunity that lay ahead. She had started to have feelings for Thomas a few weeks ago, before the doctor's death.

After almost three hours discussing the variables and possibilities of the doctor's investigation, they decided it was time to get some rest. They turned off the lights and everything seemed to be going okay until Megan put her hand on Thomas'. He did not mind and he did not take his away. Thomas moved closer and gave the young woman a quick and bold kiss on the mouth. She received the kiss nervously, but thrilled.

They slept holding each other's hands and still feeling the kiss on their lips.



The next morning they both woke up with a smile. It had been invigorating to know that they both had special feelings for the other, which helped them begin getting over the grief of the doctor's death.

The first thing they did that day was go to city hall. They got there thanks to the directions that the motel manager had given them. It was a white building with a lot of white columns and a pretty park in front. They went inside straight to the register's office where a Miss. Ann helped them politely.

– Hello. We are two Bioscience students looking for information about samples that have arrived at our laboratory. – Thomas said, trying to fool the secretary. – We only know that her name was Tess and that she died about ten years ago.

– Normally we don't let anyone have access to that information without previous



permission but Dr. Walter told me to help you as much as possible. – Megan thought it was strange that the doctor knew about Tess and had not said anything. – I'll see what I can do.

The secretary was gone for about fifteen minutes while the two students talked about who they thought Tess really was. They made a small bet in which the prize was something simple: a wish. Thomas thought she was Mage's wife, while Megan believed she was just a friend.

– Here are three reports corresponding to three women by the name of Tess that died ten years ago. You have half an hour to look at them and then you must return them. Remember that what I'm doing isn't legal.

It only took them a few seconds to realize that the Tess they were looking for was the one in the second report thanks to the photograph that they found in the doctor's house. They took advantage of every last minute that Ann had given them to analyze every detail in the woman's report.

According to the information, she was married eight years to Dr. Mage until she died ten years ago due to a cancer that pursued her the last years of her life. There was another interesting piece of information. It was the address where the doctor moved to after his wife died. The change of address was registered exactly one week after Tess' death. It was evident; the doctor had left the city after losing his wife.

Thomas was not only happy because they were advancing in their investigation but also because he could make a wish and he already knew what it was going to be.



Megan and Thomas were having dinner in an expensive restaurant in their city. It had taken them half of the afternoon to get from the doctor's previous residence to the young woman's house and once they had arrived he took the risk of asking to have his wish come true: a dinner with her.

And as a promise should always be kept, there they were. It was strange. They were used to talking about plant physiology and cancer so it was a challenge for the two of them to speak about their lives outside of the laboratory. They felt strange realizing that they were not that much different than Mage: they did not have anything outside of work.

In spite of everything, they managed to have a nice time, talking about their hopes and dreams. While the wine bottles emptied, they talked about their interests and hobbies such as that Thomas had a passion for playing the piano and Megan missed being a ballet dancer in the city's school of dance.

When it was getting late, the two students noticed that the restaurant owner had been waiting for them to leave in order to close. It was getting late anyway and the next day they had to decide what they were going to do with the information they had found about Tess and Mage. There were still a lot of questions that had to be answered.

Thomas took his classmate home to drop her off and it was when they were going to say good night with a simple kiss, maybe under the influence of the alcohol, Megan grabbed her friend by the neck and gave him a burning kiss filled with passion.

- Even though I didn't win the bet... – started Meg. – Could I make a wish too?
- Of course.



– Come upstairs with me.

In the elevator the tangle of kisses and sensual caresses began and the passion was unleashed once they got into the young woman's apartment. The passionate madness and uncontrolled frenzy was constant until the early hours of the morning.

Someone rang Megan's doorbell. Thomas was the first one to hear it. He got up, gave Meg a kiss on the forehead and went to ask who was at the door while she stayed in bed where the night before they had shared all of the love they felt for each other.

It was Dr. Mage's lawyer. He had stopped at Thomas' house first and after seeing that he was not in his apartment, went to Megan's. It had to do with the doctor's will.

Megan and Thomas received a generous sum of money as the doctor's only heirs with the simple condition that they would continue with the experiments that he had started. They also received the keys to Mage's house. They had a place to continue looking for information.



The two students got to the front door of the last house where the doctor had lived without Tess. Just when Megan was taking the keys out of her purse, Mrs. Genovese appeared with a smile on her face.

– I knew who would receive everything that the doctor had. – She seemed happy with the doctor's decision.

When they went inside they noticed how spacious it was and the amount of precious light that came in through the windows that took up the entire wall of the living room.

They did not have to investigate too much to see the letter that was for them on the living room table. On the envelope it said: *To Megan and Thomas, in case something goes wrong.*

Thomas did not doubt for a second and opened the envelope and started to read the letter that was inside. Mage, with his meticulous penmanship, had written a few paragraphs dedicated to the children that he had never had:

'Dear students and children of mine,

If you read this it's because I am no longer with you and that time and the illness have won the battle. I imagine that my lawyer has already let you know about my decision to give you everything that was mine. I know that you will use the house and money intelligently.

There are many things that I should have told you and never did... maybe to not show my weakness. A father should be support for his children, never a burden.

I was married once, yes, to the most special person I had ever known: Tess. She died of a terrible cancer that devoured and consumed her to inhuman limits. The worst thing of all is that I let her down.

When she was in the terminal stage I managed to obtain some very promising results for the cure of cancer on mice and other experimental models. We were going to continue to the next phase when Tess insisted on being the first patient to try the synthetic bacteria. She said she trusted me so much that she was absolutely sure that it would work, that I couldn't be wrong.



But I was. The treatment was a failure. I made her believe that everything would be okay and later I let her down. The cancer won the battle and she passed away. The same thing happened to some other people.

I couldn't withstand the pain for having destroyed their lives and the lives of people around them. I was guilty of offering useless hope and the suffering of having lost my wife went on forever.

I made a change of scene to a new city to try and detach myself from everything that tied me to her. After a year I was able to get over my investigation phobias and I started working in the laboratory where we were working at present.

I developed a biosynthetic element again capable of doing the same thing as the previous bacteria. This time it was a plant, a bit more stable than the previous microorganism and facilitating the treatment by eating the fruit.

My greatest fear was obtaining the first positive results in the animal tests. It was then that I had to think once again about experimenting with humans.

I wasn't capable of bringing hope to people with a new promising drug without them ending up like Tess. For that reason I did what I felt I had to do: a self-induced cancer.

If you are reading this, it means that something went wrong. Either the fruit didn't work correctly or I didn't measure the advancement of my cancer and I died before I could use the drug on myself.

I only ask you one thing. Check and see if it works. If it works, the world will be a better place, and if not, you'll have to keep looking for a solution. But please be careful to whom you offer hope. Hope is the last thing that one loses...if you lose it life goes with it, leaving everything behind.

Mage'

While Thomas read the letter out loud Megan cried from line one. The young woman's tears started falling when she heard about Tess' sad story and then even more when she heard about her boss' sacrifice.



The next morning after the intense day at the doctor's house, the two students were alone in the laboratory. Megan was holding one of the "miracle" fruits that the doctor was going to try moments before his death.

– Are you sure we should do it this way? – Megan had doubts about the plan that Thomas had thought up.

– You know he would have wanted it this way. – The young man said this while he took out a potent toxin that they used to induce tumors in laboratory animals from a special refrigerator. – If we don't trust the doctor, who will?

The plan began the moment that Thomas drank the entire bottle of the toxin. Megan couldn't stop crying while she watched him. He had taken enough of the toxin to develop multiple tumors in a week's time. Megan would control the progression of the tumors and monitor his vital signs. Besides, she would take cellular samples from accessible areas such as the skin to see if they obtained results that allowed them to use the synthetic plant on people without giving them false hope.

And indeed, in a week Thomas had developed uncontrollable colon and skin cancers. It was time for Megan to give her friend the fruit. He ate it effortlessly.



Maybe they had induced too strong of a cancer.

The next three days were hell for Megan. Thomas struggled between life and death. He did not seem to improve. The blood and skin tests showed no signs of improvement and the proliferation was still out of control.

Everything changed on the fourth day.



Thomas began to recover. All of the samples improved, reducing the uncontrolled cellular proliferation and eliminating the centers of malignant cells. From the looks of it, the fruit of the *Megium benigna* was a great success, almost a miracle. A week after ingesting the remedy created by Mage and them, the young man was healthy without any negative side effects. Megan celebrated it by giving him a long kiss, the most passionate kiss she had ever given to the young man with crazy ideas that had become the most important person in her life in a very short period of time. She was not capable of imagining what would have happened if he had left her. She could no longer imagine her life without him.

– Why do you think it took the lawyer so many days to show up? – These were the first words that Thomas said after the kiss. – Normally they don't take so long...we were investigating things that we could have known from the beginning if we would have read the letter right away...it was as if the doctor wanted us to look for it...

– I think he wanted it that way. In case something happened to him, he would give us some days to investigate and that way get to know each other in a different way. – Megan spoke in a convinced tone. – He probably did it on purpose. It was his last gift: he helped us find one another, like him and Tess.

Now they knew that the fruit worked and showing it to the public would not give false hopes. The doctor would have been proud of them, thought Thomas. The three of them had achieved their goal.



Two years after Mage's sacrifice, the world was a new place. Cancer was no longer the main lethal illness and there was a rumor that it was going to be declared as disappeared, not only because the fruit eliminated the illness but also because it prevented it with rotund success.

The cure was commercialized at no cost thanks to Dr. Thomas and Dr. Megan, one of the married couples most talked about on a daily basis. They managed to put it into circulation thanks to the money they inherited from the main discoverer of the *Megium benigna*.

The Nobel Prize in Medicine was awarded to Thomas and Megan and for the first time in its history, it was awarded with posthumous distinction to Dr. Mage. The speech given by the two young investigators was simple and clear: They thanked the doctor for everything he had taught them as scientists and people.

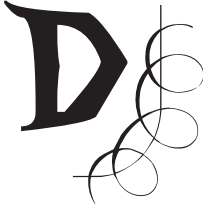
The text ended with Thomas reciting a few words in his boss' honor that, if he had been there, he would probably have said:

– This prize is dedicated to the hope that kept her alive up to the last moment: To Tess. To her and the unconditional trust she always had in him.



THE SPARK OF LIFE

ORIGINAL IDEA *Alex Valero*



r. Joseph Lehman exited the block of ‘nest’ houses like every morning. He had argued with his wife again; she did not understand his obsession with the laboratory work.

He took his usual five-minute walk to the everyday-metro station and he had to run so the doors would not close. He traveled sitting between a young boy, with his “light-knapsack” and his augmented reality glasses, and a lady who tried not to fall asleep as she hung on with apparent worry to a bag of medicines.

Without noticing it, he started to divagate about how he had gotten to that point where he exchanged more words of anger than love with his wife.

Since he finished his thesis about Energetic Biology about 8 years ago and he had been offered a main research position in one of the most prestigious institutions of the planet, he usually worked around 14 hours a day. The situation required it. The world of science had drastically changed during the last century. Left behind were the years when basic and applied investigations went hand in hand. Now, inversions were only made in applied science, not for humans but for the production of efficient energy exclusively. This situation also meant the appearance of new illnesses that nobody seemed to try and alleviate, so some parts of the population did not even have a life span of 30 years when the normal life expectancy in the year 2377 was of 181 years for the few people that could afford to pay for the expensive and almost inexistent medications.

While Lehman kept on thinking about how the planet worked, young Harrison listened and watched the Electrium concert through his newly-bought glasses, in rigorous live from the other side of the world. It was a good group. They had made electronic music popular with a reinvented touch of classical music, something Harrison really liked. At the same time he commented everything that was happening with his virtual friends. He loved no-delay connection and being connected non-stop. He was so into his concert that he didn’t notice that his light-bag’s indicator flickered red.

The energy still was being consumed by the excessive requirements of the young man and did not take long for it to run out. It was like pressing the red button of madness. When Harrison saw himself disconnected from the network, he began to feel naked and misplaced. The real world was too heavy. At that moment, only one thought haunted his mind. Getting energy was more important than even breathing. But there was one problem: his bank account was empty. He didn’t know how he was going to pay for the new doses of energy. He turned to the man who was sitting by his side; he had to be able to pass him some of his energy.

Lehman woke up from his wandering in which he floated because of the young man to his left. He was looking at him with dilated pupils; he seemed suffocated.

–Hey dude... I need some... some energy... I could pay you back. – Lied Harrison to Lehman.

–I'm sorry, boy; I'm not signed up with any energy plan. – He was offered one almost every day but he used a telephone and computer around 15 years old. He sacrificed power, but he gained in not having to charge them every hour (some business genius discovered 10 years ago the great deal that minimal-charge batteries would be).

–You gotta give me some! I need it! –The teenager was getting aggressive.

–I can't give something I don't have. –Lehman looked away.

As a result of his final comment, Harrison exploded and started beating Lehman. Luckily for Lehman, through the corridor came a man dressed in a suit, head completely shaved and with a huge knapsack that showed turbines, fans and blue flashes. He was a 'Charger'. It was the only way of getting rid of the young man.

–Stop, kid! Stop, please! –begged Lehman– There's a Charger over there! I'll pay for your doses!

Harrison suddenly stopped, took some type of plug out of his bag and started running towards the suited man that connected the plug to his generator. The boy started to calm down.

As promised, Lehman paid the exaggerated high price imposed by Electrocorp, a company that had the monopoly of almost the whole world. It was stupid to try and understand how the situation got there.

When fossil energy sources ran out, renewable sources were highly supported. This situation could have been handled if it wouldn't have been for the enormous population growth.

But this was not the only problem. Since the XXI century, technologies started to develop even faster and the obsession of having the latest devices ruled the youngsters' minds, always more prone to follow trends. In addition, vehicles and houses also required energy. In this way, putting together the excessive number of teenagers, with maintaining the established habits and the absurd obligation of the electronic style, every attempt of using renewable sources as the main energetic reference was shattered.

In this manner, the only energy that was strengthened was nuclear. The only problem was what to do with all the residues. They had an easy answer: send them to space. These expensive techniques entailed the decline of less wealthy companies that could not afford sending rockets that never came back. Like this, electricity companies disappeared little by little until only one was left: Electrocorp. This company knew how to invest and obtained huge profits that allowed them to have almost daily launches. The only downside was that prices soared to maintain this energetic model.

This meant that light became a luxury good and some sectors of the cities lived with candles and completely disconnected. In these parts lived people known as '*Fireflies*'.





Despite of the absolute monopoly, Electrocorp started to look for an energy that could produce a higher benefit. For this, they “donated” enormous amounts of money so that laboratories started to find an alternative. Up to that moment, nobody had achieved it, but to be honest, Lehman was very close to being the one.



After the metro incident, Lehman arrived to his lab without problems, entered his office and turned his computer on. The Electrocorp logo appeared on the screen. He had a slight feeling that they had the control of the private data he used, but he could not say anything since they were the ones who controlled the money. Once logged in he started to write the report with all his discoveries up to that moment so he could send it to the coordinator of energetic investigations (absurd name taking into account that no other investigations were made).

Day 1,819 in the search of Bioenergy:

Yesterday, after almost five years of investigation, the first results were obtained. The synthetic bacteria with adapted genes from Electrophorus electricus (electric eel) and Vespa orientalis (oriental hornet) have given the first positive results in the production and storage of electricity. It has been a hard road, but the multiple modifications made in the organism (ultra resistant membranes and high conductivity proteins) are capable of making it ‘immune’ to the electric current that they produce. The high voltage current originates from artificial membrane systems, created synthetically, named as Sacs organelles and Hut organelles (due to its design based on the organelles with the same name that make Electrophorus electricus capable of producing electricity) in response to a quorum- sensing process.

Yesterday, we finally achieved the spontaneous generation of energy controlling the population characteristics, nutrients concentration and light.

Placing cultures of the microorganisms over conducting plates, 12x12in, we can produce enough energy to power a domestic installation continuously without problems. The energy produced is clean, does not generate any residues and the culture grows unlimitedly if it is controlled by a chemostat. In addition, the energy can be stored in the cell itself and liberate it when it is needed by just changing a determined group of salts in the medium.

Without a doubt, we find ourselves before a new source of energy: cheap, clean and extremely efficient. This new synthetic species will be called Bioenergia voltia.

Dr. Lehman was incredibly proud of his new work; he had resolved the most challenging project of his career. After failing in his last investigation (the extraction of photosynthetic energy from plants) he had learned to get up after falling, and this time, he reached higher than ever.

The doctor’s new interest was to know what to do with the results now. His bosses were already aware of his achievements, but he had to be careful anyway. During the last months some scientists, known as ‘insurgents’, refused to collaborate. They were brilliant minds, with excellent jobs, but did not share the multinational’s



ideas. They were not in favor of giving their investigations so that the company could gain exaggerated amounts of money. Therefore they tried to spread their ideas through the internet to see if they could get to more people willing to help them without only thinking about money. The problem: they never got to develop their ideas. Electrocorp took care of the matter and silenced all the scientists in ways nobody ever discovered but at the same time everybody knew. Every man has his price and, sooner or later, all the 'insurgents' came out declaring that they had sold their investigations to the company and the investigation, as a result of the patent, became private property.

Lehman knew that his investigation was revolutionary and that in no time somebody would knock on his door with a big briefcase full of money to compensate the fact that his work no longer would be his.

But he rejected this idea; he had to think about how to avoid this. He did not want to encourage the exploitation of the people's basic needs. He had always believed that being a scientist was not a job for one's own delight; it was, beyond everything, a service to the world. And as all services, it had to get to everyday people by the easiest, most comfortable and cheapest way, to improve their life.



Going back to his 'nest', Lehman thought about how he could transmit his discovery to all the people. Maybe, he could create a web page where he explained how to take care and control the *Bioenergia* culture. After a short tutorial and the product description, the cultures could be sent home receiving an extra free growing plate. He would not demand any money, only the buyer's charity. This way he could maintain the service, keep developing the system and, if possible, pay Electrocorp to dissociate from them. It was a very motivating idea and he thought it could be a total success.

He finally reached his 'nest'. Before, they were known as normal houses. However, Electrocorp started to privatize them as a business, at first sight, beneficial for the buyers. 'If you live in an Electrocorp nest, your light will be free!'. Thus, nests became more famous because paying the electricity bill in a normal house was extremely more expensive than paying a nest's rent. Besides, normal houses suffered a gigantic increase in their taxes that made no sense and made living in a nest even more suitable for most people. This way, Electrocorp got to control everyone's life from even closer.

He rang the bell; he always did it when he got home so Judith, his wife, did not get scared. Once he did this usual routine, he opened the door. He heard voices in the small living room (the bigger nests were not compatible with the adjusted salary of a scientist) and when he got there he saw two men with suits and no hair, talking with Judith.

—Good evening, Mr. Joseph. —said one of the Electrocorp workers with no expression but trying to sound friendly, while drinking coffee in a teacup that was a wedding gift.



–I prefer to be called Lehman. And if it’s possible, without the ‘Mr.’ in front.

–Oh well, OK: Dr. Lehman. Is that better? –He said in a mocking tone– Today we received really interesting data from your lab. We were only coming by to remind you of everything you owe to our company, the same one that has financed your proj...

–I don’t owe you anything. I’m sorry but I’m not giving my results to a bunch of people that only take advantage of the people’s basic needs. I’m sick of seeing people dying because of the poor medical financing and seeing the ‘fireflies’ begging for wick for their candles. And not only that! You have thousands of young people wasting their lives, connected to devices and believing that there’s nothing else beyond them. Just today a young boy almost killed me for a miserable dose of...

–Slow down, slow down! –said the other man. – You have already made your point. We won’t annoy you anymore. We are changing, you know? You are free to offer your data as long as you pay the ‘free science’ fee. It’s a new concept we are establishing.

–OK, how much is it? –he asked as he took out his checkbook.

–A 250% increase in your electricity bill each month.

They were playing with him. They knew he was not able to pay for it, that way he would hand over all his investigation and they could make a profit out of it.

–I can’t do that, I can’t afford it. –Lehman thought quickly on a way to get out of the problem.

–Then you have to be at the central office first thing in the morning. You will have to give us a model to follow the ‘*Bioenergia*’ project.

Lehman did not even want to think about what would happen to him if he refused to give the results to the main investors of the project. It was true that they had paid for it, but they lost all his respect when their only interest was to make a bigger bubble out of it. A bubble, that seemed as it was never going to explode.

He was not going to give up; he refused to contribute to that situation.



The next day, Dr. Lehman went to his laboratory. He searched through the internet from his personal laptop, bought a domain and on his new webpage started to type. He described step by step what was necessary to make the most of the Bioenergy. He created a shop where he offered the strain, the culture-conducting plate, the necessary cables to connect it to the nests and a manual to grow and take care of *Bioenergia*. The web’s design was not very attractive, but the main objective of making his results public and free was coming true.

He had to start preparing the boxes so he could start sending them. His salary would probably vanish but he was contributing to taking a small step towards a better situation.

Just when he was going to click so that the webpage became public, the monitor blacked out. A few seconds later, a message appeared:

‘A man is taking a bath with the radio connected and on the edge of the tub... What do you think will happen?’

He felt he was not alone; bang on the head; black.



That was the order of the feelings Lehman had after discovering that Electrocorp's control went further than he could ever have imagined. Two suited men, with a tie and no hair had entered the lab silently and hit the doctor on the head with a bat, in a coordinated act with the computer controllers.

While he was unconscious, a blood sample was taken.



Lehman opened his eyes; he felt his extremities numb because they were tied to the metal chair that was screwed to the floor. He was trapped between four brick walls and he would have been in complete darkness if it hadn't been for the twinkling light that came from a television near him.

—Hello, Mr. Joseph Lehman, doctor in Biological Energy. You have been playing with fire, and whoever plays with fire... gets burned. —said a tenuous and distorted voice to sound lower than it really was.

—I should have shown my results sooner...

—You have acted in such a stupid way. You are still in time to enjoy great amounts of money if you want. We already have your results and the truth is that they are quite revealing.

—I know you will end up killing me. What is it worth being the richest man in the cemetery? —He still did not know why they were still keeping him alive.

—We will be sincere; it would not be intelligent to lose a scientist of your level.

Keeping you alive and working by our side could mean an important advance worldwide and economically speaking. We give you all the money you need and in exchange, you give us your ideas. If you don't, you will end up being an insurgent.

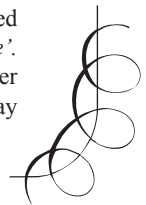
—I would be selling my soul to the Devil. I refuse! —Lehman was sure he was not going to collaborate with that world.

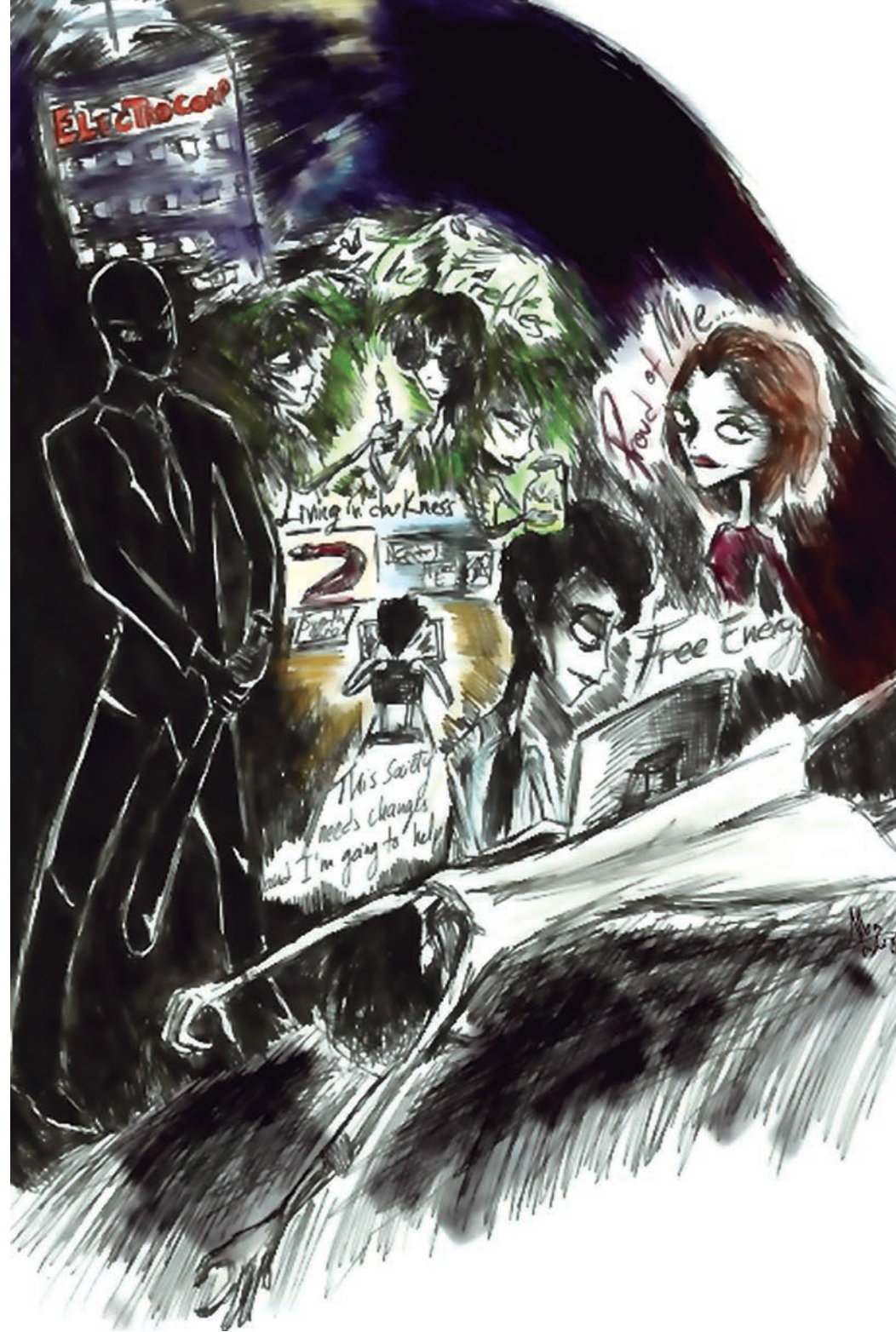
—So I hope you don't find yourself surprised when you end up being a firefly, or even better, a cadaver. —The background noise cut off, letting Lehman know that the person on the other side had disconnected.

Time passed by in a very strange way in that room; on top of this, he fell asleep without noticing it, which provoked even more instability. Sometimes he was starving and in a split second he felt like he had already eaten. Two days had passed without having a bite to eat and he could tell because he felt extremely exhausted. He did not even have the possibility to go to the bathroom. He felt like an animal, but probably smelled worst. However, the worst thing was his thirst, uncontrolled, that made his mouth so dry that he could not feel his tongue.

He knew everything played a part in the company's plan for him to end up doing what they wanted. At least, physical torture did not appear on the scene yet.

The television turned on without any sound, showing the news from the private channel, EC, with its usual midday host. The first news was shocking. It showed a picture of Joseph Lehman with the headline: '*Scientist murdered by his wife*'. They also showed a video of the paramedics taking the covered body on a stretcher through his house's front door. In a different era, it would have been a tacky way





to show the news, but at that moment in time it was something completely usual. They even did a close-up of his face with a bullet through his forehead. That man was him without a doubt. The last image was Judith at the police station, with the striking phrase: *'The neighbours assure they did not get along. Judith could face the death penalty'*.

Lehman's mind was an erupting volcano. Judith incriminated for killing him? It was absurd; everyone who knew them would know it was impossible. Despite the arguing, they were madly in love. They could argue before went to work, but when he came back and told his wife about his discoveries, you could see her eyes shining with pride.

The worst thing was figuring out how he could be on the news and at the same time in that dark room. He sensed the answer. Cloning humans was prohibited in almost all the countries due to its complicated ethical issues. Nonetheless, some developed countries, trying to gain more money, legalized it. This meant that a lot of rich people, who for example needed an organ transplant, travelled to those countries and got their own personalized clone (just starting with a DNA sample) in order to have an organ that did not give any problems and to get rid of the long waiting lists. Once the cloning technique was optimized, the next goal was getting an individual who reached the necessary age as soon as possible. It was easy: scientists stopped using human wombs to develop a whole body. The fetus was incorporated in a 'high metabolism' chamber where the cloned individual grew at an unimaginable rhythm controlling its development and cell expansion and also adjusting their aging. Thus, in less than three hours, you could have a 40-year-old man.

In addition, this could explain some of Lehman's doubts. He figured out that probably all the insurgent scientists that ended up selling their results, in reality were assassinated and substituted by a clone who signed the false contract selling the results.

He already knew what he had to do. He had to escape, get to the public and show the world that he was actually alive. He had to demonstrate that Electrocorp had used cloning techniques to accuse an innocent woman of killing her own husband, who oddly enough was going to revolutionize the energetic panorama of the moment. With this, he would probably be able to dismantle the universe created by an unscrupulous company that used all the scientific progress to gain money. But first he had a more important problem: how to escape. The company surely had optimized security protocols and a whole army of security personal.

He thought about it for a couple hours and finally reached a hectic idea that could turn out perfectly or completely the opposite. At least, he could say he tried.



– Hello? Can someone hear me? I want to make a deal. –Lehman tried to get in contact with his kidnappers.

–Tell us about it. –answered the distorted voice.

–No, I need to discuss it in person. I think I deserve that right.



–OK. –Lehman was surprised by how fast they accepted, but thought he had achieved his goal. – We have already sent an employee; please wait for 15 minutes.

In a while, a woman with short blonde hair, sharp features and blue eyes entered the room. She was wearing a suit that let you sense her exercised and sculpted body. Her looks were cold and serious, as if she was a robot from a production line but really humanized. Lehman considered for about five seconds the fact of her being an android (it would not surprise him considering what he had already seen) but he discarded it when he saw how natural her movements were.

– Good afternoon Dr. Lehman. I'm Aidiv Norton, the director. I've been informed that you want to collaborate with us. –Her voice was like her looks; cold and linear. It seemed like she was saying it by heart.

–I'll give you all my investigation; I don't want any part of it. The only thing I want in exchange is that you set my wife free again. I know you can do it.

–You still don't get it, do you? –Aidiv started to laugh in a fake way. Lehman imagined it was part of the act. –We don't want your results.

–Excuse me? –He did not understand anything.

–Think about it. Why would a company that controls the electricity, housing, entertainment, transport and even the government want to commercialize an energetic model that could be given away amongst friends, neighbours and family? –She obviously made a point. The fact that the model was based on a bacterial culture meant that his energetic model could be passed on hand by hand. You only had to take a small part of it and leave it growing in a different place to share it without problems. –We are not where we are thanks to free products which distribution we cannot control.

–And all the population? Why don't you at least try to help them?

–Our company has grown a lot. If we want to 'improve' our employee's lives, we have to think as we have been doing until now. If you were referring to the fireflies, sooner or later they will get used to the world that Electrocorp has organized.

–But a lot of people never get out of the suburbs! They would be happier with just a vehicle to go to work! –He suddenly felt naive for thinking that Electrocorp was managed by human beings. It was obvious they were monsters that only fed on people's misery.

–Darwin... the laws of evolution. Only the fittest survive. You should be familiar with that, doctor. Time will put everything in its place.

His plan was initially based on the fact that the company wanted his investigation; he never considered that they actually wanted the opposite. Now, he did not have anything to negotiate with and Judith and he would probably die. But there was a piece missing... he was still alive.

–Why am I still alive then?

–It's quite simple. We have a really brilliant group of investigators but not enough as to design a way of obtaining money with your energetic model. Our idea is to put them under your eye and that this group is able to find a way to use *Bioenergia*, but always being capable of controlling it and obtaining benefits. –You could tell that Aidiv enjoyed watching Lehman suffer – If in less than 72 hours you achieve a way of obtaining money from your experiments, we will set Judith free of all charges and we will give her a peaceful life with all expenses paid.

–And what will happen to me after that?



–You’ll have to keep working for us. You’ll have a salary in accordance with your status and scientific freedom up to some degree, which will be for sure of your taste.

–But for the world... and my wife... I’ll be dead, won’t I? – Lehman could not even imagine how his wife’s mental health would end up. Absolutely lost; without knowing what happened around her. He had to think fast. –I accept the deal. –He had to agree with them if he did not want to spend more time tied to that chair.



Aidiv untied Lehman and told him to follow her. She took him through corridors that were not well illuminated until they got to an elevator that they used to get to the 18th floor. There he was able to take a shower and finally change his stinky clothes. Then he got out of the bathroom, there was a table waiting with a bare plate of food and a pitcher of water. He did not even use the glass to drink; he needed all the possible water for his thirsty throat. After this, he sat down and ate the plate he had in front: an austere chicken breast with two slices of lemon and a few potatoes.

When he had finished, they went back to the elevator and to the 23rd floor. There awaited an enormous laboratory, all grey and white, where almost a dozen of people worked. He turned around to talk with Aidiv; she had already left. It was obvious that the company thought that Lehman did not need any more information, except that he had to manage a way to make *Bioenergia* private. If not, his wife would die.

In less than an hour, he already knew how to avoid sharing the bacteria. It was a really easy idea that he did not understand why they hadn’t come up with faster. This surely was due to the fact that all the other scientists only had knowledge about energy and probably only had basic Biology concepts.

His idea was to modify the bacteria in a way it would automatically die. A determined auxotrophy would be added to *Bioenergia voltia*. It would be a new auxotrophy never used before: a synthetic compound of their own creation, necessary for the bacteria to live. This new material would have an unknown composition, so they could gain money out of it because it would have to be bought in specific places. In addition, this necessary compound would have an extra quality: it would program the cell to auto-destroy itself to avoid sharing it.

He started to give orders to his people. The workers were distributed in different working groups and he asked for their maximum concentration and coordination to obtain fast results. His only interest at that moment was saving his wife. Afterwards, he would think about a plan in which he did not help to enslave a world that was helpless enough.

Next day, Aidiv appeared at the laboratory. She carried that day’s newspaper with a headline on the front-page that said: ‘*Judith Lehman has been declared innocent of the murder of her husband. The doctor committed suicide while his wife was outside the house*’. They had kept their promise. Now it was his turn to make his move.

–Miss Norton, we almost have the ‘user’s block’ for our bacteria. I would like



to know if, once everything has finished, I could take my wife and leave far from here. – He was asking for a favour.

–I’m sorry, Lehman. – She did not seem to feel sorry at all. – But we can’t take the risk of letting you go. We would never be completely sure that you don’t decide to go on with your web page and start sending unblocked *Bioenergia*. One bacterium would be enough to destroy our empire. You can understand our attitude, no?

–Yes... I guess it makes sense to you. –Lehman already suspected that he was going to receive that answer; but he asked for one last thing. –Could you at least give this letter to my wife? – He had prepared it last night.

Adiv grabbed it and took a look at it to see if there was something suspicious. The letter said, with sincere words:

*‘I’m sorry I had to leave and abandon you without a notice. The last thing I thought about before leaving was the letters we sent each other when we first met. I love you with all my heart and soul, Judith.
Joseph.’*



Judith was watching the television. She had spent the last days wandering around their *nest* without knowing what to do. Joseph was the only thing that haunted her mind; a thousand of theories about his suicide were possible.

On the television they only talked about the new ‘Bioenergy’. Cleaner, natural and more efficient. But she knew the investigation belonged to her deceased husband. The Electrocorp monsters were getting richer every hour with her husband’s work. Judith knew he was against this, so she did not even bother in opening all the checks she received as compensation.

But that day she got a different type of letter; it did not have a bank stamp or an Electrocorp one. It was written by Joseph. She hurried to open it, almost without thinking. Her hands trembled with fear upon the fact that she did not know what she was going to find. There, with Joseph’s stylish handwriting, she could read:

*‘I’m sorry I had to leave and abandon you without a notice. The last thing I thought about before leaving was the letters we sent each other when we first met. I love you with all my heart and soul, Judith.
Joseph.’*

Suddenly she realized something. There had to be a hidden message. When they were young, Sven and Violet, Judith’s parents, did not approve of her relationship with Joseph. He was studying to be a scientist and everybody knew it was a career from which you could not expect a lot of recognition. Her parents thought a good husband should be an electric engineer or an electrician to have a permanent and high salary.

To avoid that her parents found out about their relationship, Joseph sent letters as the Readers Club with information that seemed to be publicity at first sight. However, the Readers Club’s letters hid secret messages. If you took a candle, its heat showed a message behind the original writing. It was as an old children’s trick, as easy as writing with lemon juice.



She looked for a candle in a drawer. At first, she suffered when she thought it might all be a false alarm because it was something they used so long ago. She lit the candle and brought the paper closer. With the heat, scrawls began to show:

'Judith, I'm still alive. Electrocorp has been carrying out illegal activities. They have kidnapped me to make sure I don't set free Bioenergia voltia unblocked. They attacked me in my lab and cloned me to fake a suicide. They incriminated you and threatened me with letting you die if I didn't work with them.

You have to help the world know the truth. Give them the light they need; show them the truth.

I'm trapped in one of the company's building, but I don't know in which one. I only know I'm in the 23rd floor.

I need to see you and end this torture.

I love you,

Joseph'



Lehman counted 13 days in the laboratory. After achieving the bacteria's blocking, they started working on another brilliant idea Aidiv had: how to create synthetic plants capable of regulating the oxygen production to substitute the natural ones and charge for the new ones.

While he thought about a way of placing molecular switches in the plants, a scandalous racket surrounded the building. He went to the window and saw, with great confusion, how thousands of people called out: 'Freedom for Lehman!'. They had banners and signs with messages against Electrocorp and their methods.

Just in time, Aidiv entered the room and screamed:

—What the hell have you done!?

Lehman took advantage of the door Aidiv had entered through and that had kept him prisoner. He pushed the door and ran towards the elevator. The security alarm started to sound and all the security personal looked for Lehman, but they got to him just when the elevator door had completely closed.

Between each floor seemed to pass an eternity, until the 8th floor where the elevator suddenly stopped. They had cut the power off. Lehman opened one of the ceiling panels and climbed up on top. There he found an emergency ladder and kept on descending.

The ladder reached the floor and the EXIT sign shined over a door; he rushed towards the exit and appeared in the company's hall.

The entrance was infested with all types of police. Reporters from small independent channels also waited with their cameras. All of a sudden, Lehman showed up through a maintenance door.

As he came out, the officers surrounded and protected him from the mass of people. Meanwhile, the public acclaimed and cheered. Lehman knew he was safe and sound and finally had made it. He could now uncover all the lies that were the foundation of Electrocorp.

Through the extreme amount of people, a passageway was created; Judith ran



towards his arms. They once and for all found themselves in a long hug that ended with a sincere kiss full of affection. After this, Lehman could only repeat the same two words: *Thank you.*



The government, tired of being under Electrocorp's orders, carried out a long and arduous investigation as a reaction to a woman that began to move heaven and earth through internet and means of communication. During the raid were discovered horrible crimes as the murder of innocent scientists, kidnaps, cloning processes and non-orthodox methods for such a powerful company.

This investigation culminated in the closure of the multinational and the detachment of all its relations with housing, communication media, transportation and entertainment.

All the houses now received free kits, distributed by a new company known as J&J, which allowed the installation of *Bioenergia voltia* cultures in each house. It shared all the advantages with the previous electric model but had one special added benefit: it was totally free. It was such a revolution that the own dealer encouraged everyone to share it with their beloved ones.

The change had started: The fireflies finally got the chance to see a light shine again in their houses and some even saw it for the first time in their lives; the scientists were finally able to choose the branch of science they liked the most; medicines were improved and less expensive; J&J and other new companies financed detoxification centers for 'energyholics' and like these a long list of quality of life improvements.

Step by step, the social differences and the venoms which infected the population's minds were diminished and the world recuperated its spark of life.-



TEN TALES ON SYNTHETIC BIOLOGY

A NEGATIVE VISION

Valencia Biocampus iGEM 2013



VLC / CAMPUS
VALENCIA, CAMPUS DE EXCELENCIA INTERNACIONAL



TEN TALES ON SYNTHETIC BIOLOGY

by Valencia Biocampus team attending the 2013
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For more than twelve years, Kathy Jo Wetter has conducted research for ETC Group on emerging technologies and the impact of corporate power. She works in Durham, NC, USA and holds a PhD from the University of North Carolina at Chapel Hill.

Yesterday, I was in New York at a United Nations (UN) meeting about “Sustainable Development Goals,” an idea that had come out of another UN meeting, in Rio de Janeiro in June 2012. The official outcome of the Rio meeting – endorsed by 193 UN Member States – was a document called “The Future We Want.” In that document, technology plays a prominent role in bringing about a brighter future marked by a healthier, “greener” and more equitable world. Half the scenarios in this book also describe a future we want – with synthetic biology helping to cure disease, clean the environment and provide sustainable energy. The other half reflect a dystopic future where synthetic biology fails to produce the future we want due to corporate greed, bioterror or “bio-error” (unintended effects).

My organization, ETC Group, is not opposed to new technologies, but we are concerned that policymakers turn to technological fixes for every social problem. Still more importantly, any major new technology introduced into a society that is not a genuinely just society will exacerbate the gap between the wealthy and the marginalized. New technologies can be profoundly disruptive and that disruption can advantage the rich and devastate the poor unless they are prepared. A heavily funded (and hyped) area of synthetic biology research, for example, is putting together synthetic genetic “parts” to create novel microorganisms that function as so-called biological factories that directly produce high-value commodities. The goal is to replace natural commodities – such as fragrances and flavours – with synthetic biology-based “equivalents.” What happens to the 200,000 vanilla producers in Madagascar, Reunion and Comoros, for example, if the bottom falls out of the vanilla market when a synthetic biology-enabled substitute is commercialized?

An emphasis on the positive potential of a new technology like synthetic biology requires a concomitant emphasis on a strengthened global, regional and national capacity to assess its diverse potential impacts before it comes to market – including social, economic, environmental and health impacts. That’s the only chance for synthetic biology to make a contribution to a (sustainable) future we all want.



Kathy Jo Wetter

23 September 2013

THE ATINTANS

ORIGINAL IDEA *Alba Iglesias*

Undag always wanted to belong to the hunters' group of his village and that day was the final test in which his labor was going to be decided. If he passed that test, he would be the youngest hunter in the history of the 'Atintans', an unknown tribe in the Brazilian side of the Amazon.

His master was simply known by the nickname 'The Ancient Man' and nobody knew his real name because he never talked. The old man communicated by signs, something that made the learning more difficult but was helpful for the hunting process because he never made a sound. When Undag finished his training, which lasted several rain periods, 'The Ancient Man' smiled at him and let him know that he was already prepared. And that is why he was there today.

The challenge was simple: he had to bring a piece of meat big enough to feed all his tribe for three days. If he did it, he would get a necklace according to his level. That position would also give him some privileges like marrying Sare, the healer's daughter, with whom he had already been exchanging smiles. They talked a lot, so Undag knew the girl had been working as a harvester. This meant she was in charge of growing and harvesting all the products from the gardens and trees in the village.

Hunting alone could last from less than a day to two or three complete ones. If he made it in little time it would mean he was more qualified for the position and everybody would be even prouder of him. It was the most important moment in his life; Undag was face to face with the dense jungle and with more than half of the village at his back, included beautiful Sare. When he took the first step with his spear, a small stick with a sharp stone tied, the entire village started to yell his name to encourage him.

He felt confident inside the jungle; he had been preparing himself for a long time analyzing 'The Ancient's Man' movements and trying to mimic them. Thanks to him, Undag learned how to walk over the dead leaves without making them rustle, how to listen to the silence and notice all the small disturbances to appreciate the prey's direction. He also learned how to discriminate an old trail from a fresh one.

And there it was, like a present: a broken branch, that by the color of its leaves and the amount of sap it had, he could deduce that it had not been long since an animal had gone by. The height of where the branch was broken indicated it was a large and stocky animal, probably a wild boar. It was his lucky day, thought Undag.

He followed the footprints he found once in a while and the crooked branches that formed the animal's trail. If he finally got that prey, Sare's family could not be against their marriage. He tried to stop thinking about her because a hunter must



clear his mind and be focused on his objective; he had to visualize his prey and take into account all the possible variations and conditions he could come across. For example, it was not the same situation if the wild boar was calmly drinking than if it was running away from a jaguar. Although, truth be told, if it was a jaguar he would be the one in trouble.



Yandú the village's shaman stood there with his daughter, Sare, by his side. He was an attentive man and he had noticed she really liked the hunter who was taking the test that day. That is why he had prayed to all the gods the night before asking them to accompany the boy in his first hunt, wishing him luck and success.

The truth is that the dreams he had been having the nights before were not very positive with the boy's return. They were dark dreams where bloody red and ebony black blended together in spirals. He could see people that were not from the tribe with a brilliant aura that, after shining, turned sinister. He did not know how to interpret these dreams but one thing he had clear: Undag was going to have problems during his first hunt.

The shaman was incapable of telling his daughter about it; she seemed so happy and excited with the idea of the boy's victorious return that he was unable to destroy her innocence. In addition, similar dreams had been going on for several days and



none of them seemed to come true at the moment. One night he dreamt that their river did not have any fish and in another dream he saw their plants with their leaves stiff as stones. They were all ambiguous dreams that probably did not mean anything; that is why he still had hopes that Undag would return sound and safe so he could become a new family member.



The young disciple of 'The Ancient Man' followed the trail closer and closer and he could already feel in the air that the wild boar was in a more adjusted radius. He kept on moving silently until he saw it in the middle of the jungle. There was the wild boar he had been following. It smelled all around without even noticing that a hunter, craving for success, watched him from the brush.

First he tightened his whole body so that the spear became a natural extension of his arm. Second, he put his arm back to get the maximum power but without forgetting about the delicate balance between tension and aim. Third and last, he threw his weapon against the animal with a fast movement.

Without noticing it, the weapon had gone through the animal. The death was fast and painless, leaving the animal lying on his right side waiting for the hunter to pick it up. Undag got closer as he took his silex knife and a couple of strings from his loincloth. He tied the wild boar to the stick of his weapon and carried it on his shoulders. It weighed more than he had expected, but instead of discouraging him, it gave him even more energy. He had accomplished the mission, and not only that; he had made it in less than it had ever been done before.

While he went back to the village, Undag heard a loud noise coming from his left. It sounded like a whole group of wild boars walking together... it was even louder. He got closer out of curiosity. If he took one prey it was enough, but if he managed to get two or even three, he would become the best hunter of the Atintans.

What he saw when he finally got closer left him speechless: it was a group of people, with light skin, completely dressed and with huge bags that were not made of familiar material. Undag was so shocked he did not have time to react and could not avoid being seen; the mysterious group of people got closer to Undag.

They tried to talk with him using very strange terms like 'search' and 'help'. He did not understand anything they were saying and he started to feel uncomfortable when they smiled without him knowing what they were smiling about.

The young Atintan did not know how to act because he had not heard of anything like that before. Nobody foreign to their village had ever gotten so close to them, and much less, people with a different skin color. Nevertheless, he thought that the decision of what to do with these people should be taken by somebody with a higher position in his tribe. He pointed with his hand the correct direction to the village and the light-skinned people quickly understood him and started walking by his side.



Yandú watched with astonishment how young Undag arrived from the jungle with a gigantic wild boar on his shoulders. He had achieved it and in an incredibly



short time. He was glad his dreams were a simple old man's nightmares. He smiled when he saw his daughter, Sare, running to the boy's arms making the huge animal fall on the ground picking up dirt.

–I made it, Sare. – said Undag in the Atintan language. –I also found something else.

Sare was astonished at how four people with light skin and very big bags came out from the jungle. She was scared. She turned around looking for her father and when he saw the foreign people, he gave the alarm so that in less than a blink of an eye all the Atintan hunters were pointing at the outsiders with their spears and arrows.

Everyone in the village started to gather around the hunters and when the light-skinned people started talking in a language they did not understand, they were shocked. They said strange words; for example terms like 'bacteria', 'plant', 'transgenic', 'enrich' and 'present' were the ones they repeated the most while the foreigners feared for their lives.

The misunderstanding finished when the strangers got down on their knees and showed over their heads a small transparent box that contained seeds from some kind of plant. When he saw their offerings, Yandú ordered everyone to put down their weapons; they must not disregard someone's present because it was a sign of good intentions. Sare was the closest to the new visitors so she was the one who took the small box with seeds in it. At first she was scared of the unknown, but in a second she forgot about the danger when she recognized the seeds. They all belonged to healing and fruit plants. There was chuchuhuasi to cure colds and fevers, sacha, which was useful against snakebites and seeds from *purpura bacca* and chestnuts. The thing Sare was most fascinated by were some seeds she had never seen before and she was eager to know what grew from them.

Undag was the one who received, from another light-skinned man, a small, round type of stone full with something similar to bone marrow from the animals he hunted. According to the man who gave it to him, it was known as 'bacteria'.

The last surprise of the encounter was that one of the four men knew how to speak Atintan. There were some words he did not use correctly and other ones that he did not say right but despite that, the village could understand his message perfectly. That man must have been shy because he did not talk before when they were about to die.

–Hello, my name is Benjamin but you can call me Ben. We bring gifts to you. We have arrived to give you plants and better soil to grow your food. –At that point the entire village was paying attention to Ben, the light-skinned man who knew how to speak their language. –If you use these, your gardens will never die and insects will never eat their leaves.

When they heard this, the villagers were not happy and did not understand why those strangers brought them presents. They did not trust foreigners they did not know. However, Sare was more optimistic and knew that their biggest problem was when they did not have any food because of climate changes and insects that destroyed their plants. She tried to convince her village and make them understand that if the light-skinned people would have wanted to harm them, they would have already been dead. Because Sare was the most experienced harvester, the tribe decided to believe in her.

–Great! –said Sare finally.

–The 'bacteria' will assure that nothing else grows except your desired plants.



–The young harvester understood that what Ben wanted to say was that weeds and undesired plants would not grow in their gardens.

The entire village was finally convinced and happy with what the strangers had brought. Now, the harvesters could work more efficiently and avoid problems that damaged their harvest.



Ben and his friends were the ones in charge of planting the new seeds and distributing the ‘bacteria’. What Sare understood was that, the ‘bacteria’ would eliminate everything harmful from the soil and would add what the plants needed to grow strong and without problems.

Sare soon noticed that she had a lot of free time; the birds did not eat the recently planted seeds so she did not have to look after them all the time. Besides, the plants grew extremely fast, something Sare appreciated because she hated to wait for the first sprouts to show. Thanks to all the hours she did not have to waste taking care of the gardens, she could spend more time with Undag. Her father had approved of their relationship and they would soon try to have a baby. That way Sare would feel fulfilled: mother and harvester; she would be an excellent part of their tribe.

However, something bothered the girl. Her future marriage with the man who would probably become the best hunter of the tribe did not seem to make her father proud. The spiritual adviser had spent days wandering through the village with a dark and tired look, dragging his feet, apparently depressed. Not even the uchu sanango, a natural plant, made him cheer up and a rumor was starting to spread in the village. Some people said he had started to use ‘toe’, a powerful hallucinogenic plant that had been prohibited a long time ago because it made the ancient shamans lose their mind. What Sare thought was that her father was trying to understand the dreams he had been having.

One night before going to bed, the girl went to visit her father to try and cheer him up by explaining how the Atintan gardens were growing faster than ever and without worrying about the floods and winds because they could resist almost everything. As she spoke with her father, she assumed the rumors were true because he could not speak correctly. However, he excessively repeated the same word: catastrophe.

Undag went hunting almost every day because he was in charge of obtaining enough food so that the visitors were always happy and taken care of. That day he had a special order: besides hunting, Sare had asked for guayusa leaves, a very energetic plant to cheer Yandú up. She had explained to him what the plant looked like so he could identify it perfectly.

He had no problems finding the plant; it was all over the jungle and he found some next to the wild boar he had just hunted. He took some leaves and tied them to his loincloth to take them back. When he got to the village he gave the prey to ‘The Ancient Man’, so it could be cooked correctly. Afterwards, he went to talk with Sare.

The girl was discussing with Ben about all the time they saved with the new seeds they gave them and how weeds did not damage their gardens anymore. Undag greeted the light-skinned man by tilting his head and tried to give Sare the leaves she had asked for, but they never got to her hands. Ben ripped the leaves out of Undag’s



hands and saved them in one of his gigantic bags while he said things the natives did not understand like ‘wrong’ and ‘experiment’.



In less than the half of the usual time, the Atintans’ gardens were completely grown and ready to harvest. Insects did not even go near the plants, avoiding any damage, and other dangerous ones simply disappeared so they did not even bite the habitants avoiding all kinds of illnesses. There were many types of plants but the most interesting ones were the fruit ones. Sare knew most of them, but there were others that she had never seen before. Ben explained that they were called oranges, apples and cherries. When they collected enough for the entire village, they ate them together one night and everyone seemed to love them.

Everyone tasted the new fruits except Ben and his colleagues. They had been there for a long time and they usually tried to help and collaborate with the tribe, but when it came to the food, they only liked eating the meat the hunters brought and never tried the products from the seeds they had brought.

Time went by and the plants that gave them the food they ate grew without problems. Undag and Sare got married with the blessing of her father and the whole village was happy. The couple’s role in the tribe was crucial: she would end up being in charge of all the harvesters and he would be master of all the hunters when ‘The Ancient Man’ passed away.

Once the plants that the light-skinned people called ‘transgenic’ had already stabilized and made the Atintans’ life easier, Ben and his colleagues went back to their original city and were bid farewell with a big celebration. The entire village wished them the best and told them they were always welcomed to their tribe.

The Atintan tribe had never lived better in all their generations. However, the old shaman and healer of the village, Yandú continued having horrible nightmares day after day; there was always plenty of blood and suffering.



The main researcher and doctor in Plant Biotechnology, Benjamin Bostrom, arrived with his three fellow scientists from the Institute of Plant Biotechnology and Innovation.

After more than three years working with an unknown tribe from the Amazon, they finally had conclusive results about the benefits of their new plants and synthetic bacteria. They were a complete success: the time they needed to grow was reduced to the minimum, insects did not attack them and climatological factors did not disturb the crops. In addition, the soil-enriching bacteria showed, in diverse quality analysis of the ground, that they improved the nutrient composition and served as a weed-killer. Besides, as they expected, the people who consumed those products had no negative effects as they could confirm from the sequenciation of the natives’ fecal samples that the scientists secretly collected.

When they had to show their results, they would say that the final study had been done with 571 individuals of all ages, but they would omit the information that they



actually used the Atintan tribe. They could have avoided going to the Amazon if those damn ecologists against transgenic food would not have sabotaged all their commercialization campaigns.

Even though animal tests gave positive results, the ecologist and anti-transgenic activists defended that nobody could ever know how modified and almost synthetic plants could affect the population on a long term basis because laboratory animals did not live long enough to study it.

The groups against genetically modified organisms launched exhaustive campaigns based on lies and fallacies to avoid the commercialization of the products. These, unfortunately, worked and nobody wanted to try the new and efficient products.

Due to all these problems, Ben and his colleagues had to look for a large group of people who had never heard about the “danger” of their plants and they had the great idea of proving their point with entire tribes disconnected from the developed world. The data was reliable and positive and besides, important mathematicians developed extrapolations to study how the products could have some affect during the next 100 years and showed no differences between the people who had tried them and people who had not. The fact that all the samples came from the same place did not matter either because thanks to advanced modeling they could conclude that there were no differences between the small tribe and the rest of the population.

Thanks to the study’s consistency and the economic support from the most powerful companies that were especially interested in their products, the *superplants* started to be commercialized after difficult debates and legal issues. Once on the market, everything continued without problems and all of the gossipy mouths of the ecologists were silenced. People all around the world consumed their products, underdeveloped countries did not suffer from hunger and the team that created the superplants started to earn great amounts of money. Doctor Benjamin felt that his life dedicated to science had finally served a purpose.



Thirteen years after the light-skinned people had visited them, not a soul could be heard in the Atintan village. Birds did not sing and animals did not look for food there anymore.

Undag lay next to his wife Sare and his son that had become ten years old not long ago. He woke up with a high fever. The Atintans had been suffering an uncontrolled decay. Before there were almost 600 people in their village and now the population had been reduced to the tenth part. It was all the plants’ fault.

As the years passed by after Ben’s visit, the new plants started to displace the autochthonous flora up to the point the Atintans could only consume transgenic food.

The problem was not that the humans were not prepared; it was that the plants that were so genetically modified lost all genetic control and started to mutate. They changed so fast that they ended up being toxic for the human species and also for most animals because the organism could not tolerate the enormous amount of mutations they ingested.



They should never have fallen for how easy it was to work with the synthetic plants provided to them. They tried to stop eating those plants and started to consume only fish, but it was too late. Once they had eaten those altered plants for so long, their bodies were destined to get sick and finally die. Nobody was ever capable of understanding how those promising plants could do such harm.

Undag and his tribe would have liked to warn Ben that their presents were not as good as they seemed and that they were dangerous to use. But the fact is they never had the chance. The doctor died because of his own creation. No scientist doubted about all the experimental processes and mathematical analysis that had been done and no one could have stopped the powerful scientific companies from commercializing the *superplants*. After all, the whole society trusted science, like the Atintan tribe did. The plants had already finished off with the 90% of the human population ... and continued.





THE COUNTDOWN

ORIGINAL IDEA *Pedro L. Dorado*

i

It was already 3:00 am. I breathed deeply and made myself aware that finally I was going to do justice. I got out of the car I rented yesterday with a false ID and I kept on walking towards the laboratory where my future victims worked. I had thought, during years, about taking the final step that would finally let me be at peace. It was a hard decision and, once I accepted it as the only possible solution to my problem, I had to work hard so it did not have any gaps.

My method was not going to fail. The synthetic bacteria that I had been creating for over more than 4 years would destroy all form of life that contacted it. I also made sure that it was not just any kind of death; it had to be painful. It was true that collateral damage could occur and innocent people could get hurt, but with them would also die three of the twelve damn scientists that killed the person who I had most loved.

When I entered the building, I immediately recognized it because I had been studying it from the maps I managed to steal in non-orthodox ways and hacking public suits. I avoided the security guards because I entered through a maintenance door and I went up the stairs to get to the third floor where my future crime scene was going to be.

In the bag I carried there was a complete suit from a P4 laboratory; these were used with the most dangerous microorganisms of the world. I put it on and spent a couple of minutes enjoying the sensation of not feeling the exterior. During the four years of laboratory work while I developed the deadly bacteria, I had got used to using similar suits. I even got to the point of loving the fact of being completely isolated and feeling in sync with the silence.

I grabbed the spray charged with my 'synthetic death' and started to sprinkle the whole room. Once I used the whole bottle, I went back where I entered; I got into the car and drove to my small house with my cozy garden in the outskirts of Paris. As soon as I got there, I went upstairs to the main bedroom and lay down to rest without taking my suit off (if I did take it off, I would die and could not finish my work). I was nervous and thrilled; I could not wait for the news to be on the television tomorrow. With that anxious feeling, I fell asleep with my suit as my skin.



Doctor Irza was in her second floor office in the *Institut National de Police Scientifique* of Paris. Not even a year ago, she was promoted to head of department thanks to her perfect criteria when it came to the crime scene analysis and for her innate capacity to deduce the *modus operandi* of the assassin. While she was writing the report about her last solved crime, she received a call from the headquarters; three scientists had appeared dead in a private laboratory of a pharmaceutical company known as *Evopharmatech*.

Thirty minutes were needed for her to get to the crime scene. The television cameras gathered around the main entrance of the building and tried to get some kind of information about what had occurred by yelling at everyone who passed by. Irza passed calmly under the police tape as she showed her identification card to the police that was controlling the access.

She entered the building and was guided to the crime scene. Before going through the last door, one of the detectives at the door warned her that what she was going to see was not going to be nice; she did not seem to care. He also told her that they suspected there was a murderer involved because the building's security system had been cut off between 3:00 and 4:00 in the morning and the three scientists had died at 8:00 am.

She finally got to the crime scene and saw the police agents and the scientific police analyzing the cadavers; she did not really understand why they needed her there with how well the scene was covered. While she thought about it, a young scientist approached her:

–Hello Dr. Dutrillaux. –Irza hated when they called her by her last name because she felt older. – We have called you because we can't understand what the cause of the death is.

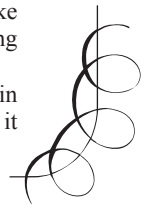
–Well, let's see what we can figure out. – She got closer to the bodies with her tape recorder in hand and started her analysis. – *Evopharmatech* case. Three bodies: two males and one female. They all have the same signs including blisters all over the body, severe inflammation and skin turning violet. Tissues seem to have suffered necro... – Irza took too long to realize it. – Shut the door! Everyone who has entered this room must remain in the building! The cause of the death is a very aggressive microorganism and probably contagious!

Once these words were spilt, panic aroused. People had to stay locked up while a specialized team in microbiologic threats arrived at the building. When they finally got there, they entered the room with their special equipments, took tissue samples of the cadavers and left as soon as possible. Irza knew that until the samples were analysed and they knew what they were working with, they would not be able to leave. They had been stupid, each and every one of them working there; how could it not have occurred to them that it could be an infection being in a laboratory? The mistake committed was ridiculous, but the danger it could be, was not.



At 9:39 a.m. my alarm clock rang; the first thing I wanted to do was watch the news to see my first masterpiece announced. I got out my bed with a smile due to the fact that I still had my suit on. It made me feel comfortable but I could already take it off and this way be able to go and buy the newspaper, go for a walk without raising suspicions, feign a normal life and go to work.

I took my second skin off and went down to the basement to put it away in the closet where I saved other identical ones. I really liked the place; I adapted it



5 years ago so I could start my investigations. I started with little material to later keep on expanding it and end up having a marvellous maximum-security laboratory where I could carry out my plan. Before leaving the laboratory, I took a small leather notebook from my safe; here my darkest ideas were revealed.

After visiting my sacred room, I went upstairs to the kitchen and had some coffee while the news talked about things lacking all type of interest. It all changed when it finally appeared: a news reporter talking about three victims found in a laboratory with the *Evopharmatech* building in the back. My heart beat faster and I only started to smile when I heard their names: Doctors Dietrich, Skinn and Bast. It was them! I knew I would hit my target! I opened the leather notebook, looked for their names and crossed them out.

The adrenaline started to run through my veins making me feel euphoric because I had started my revenge with success. After experimenting that feeling, I knew I wanted to repeat it all the times that were needed.

I kept paying attention to the news and felt even better when I heard that thousands of policemen and scientists were trapped under quarantine afraid that their lives would end like the unfortunate other three scientists. Naive. The bacteria I set free last night would not even exist by now in that place due to one of the modifications I added to the organism. This allowed me to take my security suit off without being infected. Sooner or later they would figure out by themselves that they could not get infected. For me, the day had only started and amongst other things, I had to prepare my second attack.

That time I would go for the four founders of *GenAB Biocompany*: Doctors Ving, Almond, Ryzhov and García.



After several hours trapped and isolated, Irza could leave the *Evopharmatech* building. According to the biological control group, the cadavers were absolutely clean; there was no trace of any dangerous microorganism. They also did not find any harmful organisms in the building. The head of the scientific police felt useless when they told her; she had been positive that the signs corresponded to a body infected with *Streptococcus pyogenes*. She had seen some cases like that during her 5 years as a doctor before joining the police force looking for new experiences.

She gave the alarm as precaution but by then she started to doubt if she had been right or not. The necrotizing fasciitis cases did not give such fast and lethal signs. In addition, after the incident she asked the people that worked in the building and they assured that the laboratories were only level 1 of biological risk. This meant they did not work with any dangerous organisms. What she understood was that they only experimented with microorganisms that produced antibiotics; the investigation with dangerous bacteria was done abroad. Everything seemed to point to the fact that the deaths had not been caused by something in those laboratories and therefore the only thing that could make sense was that the three of them had been infected in a different place. However, the fact that all the victims had died at the same time, in the same building, left no place for logic. Someone must have done something between 3:00 and 4:00 in the morning, but it did not make sense that the flesh-eating bacteria had been liberated and was not there anymore.

Irza was a little bit lost with that case because she was not used to crimes that involved microorganisms and for that reason, she decided to widen her point of view: she called the expert in microbiology of her department.



–Good afternoon, Dr. Delacroix. –The expert in microbial pathogenesis, Atlas Delacroix, was the best in his field. He was capable of recognizing any organisms from their signs and knew all about those pathogens. –I guess you have already heard about the *Evopharmatech* incident. We need your help.

–Sure! – Always, since he was hired 5 years ago, he had been an energetic and effusive man. –What do you need to know? It seems to be an accelerated infection and...

–Yes, it's something like that. But this is not a call to solve doubts; I want you to work on this case with me. At least until we know if it's a crime or a laboratory accident.

–All right! I'm on my way!

He did not take too long to get there. Irza was surprised by how extremely happy that man always looked; it seemed as if he never cared. The truth is that she felt pretty attracted to him. He was handsome: green eyes, a bit younger than her and being co-workers gave the situation an attractive risk.

Together, they started to look at all the photographs from the crime scene and went through the timeline of the actions to see if they could finally understand how everything had gone so fast. Atlas had doubts; everything indicated that they were facing a case of necrotizing fasciitis, but all the evidence went in another way: no microorganism had been found, they people who had entered the room did not get sick and everything had occurred in less than 4 hours.

When it got dark, the microbiologist decided to take all the work home and meditate it while sleeping; Irza, on the other hand, stayed, analyzing the pictures time and time again trying to find out what they were missing.



I picked up from the basement another spray filled with *Streptococcus pyogenes*. That night's plan was exactly the same as the one from the night before. At 3:00 am he would enter the *GenAB Biocompany* building and scatter the bacteria with its 'vital clock' in the 4 offices of the company's directors.

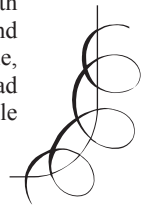
When I arrived, I left the new rented car in one of the security camera's blind spots; I turned on the computer and temporarily disconnected all the security controls the building had.

That day, I would add a new rule to my planning. The day before I made the mistake of entering the building without the security suit and I could have left some kind of evidence or someone could have seen my face. That time, I got dressed before leaving the car; this way I would avoid leaving any trail that could lead to me. I took the spray and went into the building. That time there were no security guards so entering through the back door was easy.

I spread the bacteria in the offices while I thought about how much fun the police officers were having trying to understand how someone could die so fast; it was easy, another modification I added was an accelerated lethal ability.

The 4 years I spent generating that microorganism were not in vain; I managed to create the perfect weapon thanks to Synthetic Biology.

I remembered that 11 years ago my dream was to study something related with Science to help people and all that garbage that everyone usually said. My mind changed its direction when after 3 years the people who I thought were admirable, ended with Eve's life. When I finished my degree with honors, my objective had changed: I went from wanting to help the world, to wanting to finish with the people



that made my sister die and with this, offer society a service by eliminating all toxic scientist that do not have any ethics nor control.



PEDRO L. DORADO

–Atlas? Are you available? –asked Irza.

–Yes! Is there work to do? – His boss nodded.

Those were the first words the scientists exchanged. What Atlas understood while going to *GenAB Biocompany*, was that six bodies had appeared in that building with exactly the same signs as the first three victims. Once again, there was no trace of a microorganism and the security systems had failed from 3:00 to 4:00.

When they arrived to the biotechnological innovation company's building, Irza started to explain her theories to the microbiologist:

–I think we are working against a murderer that follows a very determined pattern. So far, all the victims are scientists that later on became business people with important pharmaceutical companies. My first choice is that we have to consider a criminal that is trying to win a commercial race, or similar, as *leitmotiv*.

–I leave those decisions to you, boss; I can only try to understand how the victims die.

–Call me boss again and I guarantee that you will regret it for the rest of your life. –She hoped she had made things clear; she did not like those types of formalities that made her feel old.

–Slow down! What would you think if I invited you to a coffee when we got off of work? – Irza found the proposition daring but at the same time fun.

–We'll see...– She acted tough but knew she was going to accept.

When they analyzed the crime scene they noticed it was almost identical to the previous one, except that this time the bodies had been found in different offices. This



fact helped Irza realize that the objective was probably only the four company's bosses. The other two people were collateral damage; this thought was strengthened when they discovered that one was a secretary and the other one was a master's student.

–I've been thinking. –Atlas said. –Maybe, the murderer is using *Streptococcus pyogenes* but modified by Synthetic Biology.

–Synthetic Biology? Explain yourself and be convincing. If you are, I'll accept that coffee.

–I think the microorganism could be modified so that it worked like a clock, this would mean that once it had killed its host it would auto destroy itself. This way the murderer would not leave a trace.

Irza looked at him, amazed; it was a risky hypothesis but it explained a lot of things.

–Could it also be possible to kill faster thanks to Synthetic Biology? –she asked Atlas.

–That was the next thing I wanted to talk about. There aren't any previous publications about it; creating a more deadly organism is completely non ethical and only imaginable in a biological war. But yes, toxins could actually be made stronger to cause death in a couple of hours. –Even though it was a delicate subject, Atlas smiled because he knew he had won a coffee.

Irza and Atlas exited the building together. They did not find anything revealing in the crime scene but at least they had their first hypothesis. The press attacked them asking for answers and if there was a criminal involved or a new disease spreading around. To avoid theories that could scare people, Irza explained that they thought they were crimes that had economic interests behind them and that the weapon was a synthetic bacterium with stronger toxins that only killed during its biological clock's 'countdown' before it was auto destroyed. With this, the head of the scientific police intended to relax the media and let the murderer know that they were aware of how he worked, in case the hypothesis was correct).

They had their coffee in a small cafeteria next to the *Louvre* museum. It was a bit more expensive but the views were priceless, something that helped both scientists disconnect easier from work.

–A question. Irza is a really weird name. Where is it from? – Asked Atlas.

–My complete name is Irza Dutrillaux. My mom was from India and my dad was from here. But it's funny you ask me that question. – She really liked being there with him. – What kind of name is Atlas Delacroix?

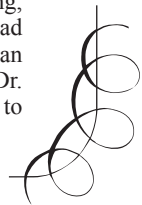
–My mother was a fan of biblical and mythological names... I got the second group and she picked the titan's name.

–Interesting... even curious.

They kept talking almost for an hour and then Atlas took her home like the gentleman he was. Irza felt even more attracted to him but she was not brave enough to make the move. Her plan would be to wait until he invited her again.



I watched the news while I ate supper; I could already cross out the names Ving, Almond, Ryzhov and García from my list. In the report I was watching, they had just given me the nickname 'The Countdown Murderer' because of a more than accurate hypothesis that was formulated by the head of the scientific police, Dr. Irza. They had discovered one of the most important modifications that I added to



the organism: the ‘vital clock’. When the specified time had passed, the bacterium auto-destroyed itself eliminating all traces. This gave me some advantages to use it as a crime weapon because it would be impossible to track and above all, I would not destroy the whole world.

Instead of feeling furious due to the fact that they knew how I worked, I felt euphoric. It was an extra risk that I assumed as a challenge: now I had to be more exact than ever.

That same moment I decided to take another precaution: I disconnected the security systems from Irza’s work place. Maybe visiting Dr. Irza would be necessary.

That night I was going to attack again. The same pattern: it would be from 3 to 4 a.m. with my special suit and I would spray my flesh-eating bacteria all over.

The first stop was a small laboratory in charge of drug development. When I got to the place, I did not have to disconnect their security alarms because they did not even have any. I entered the building and I bumped into the three people I had gone to kill.

–Hello, idiot. We have connected all the dots and we’ve been waiting for you. –said Fontaine. I noticed he was trying to say it with a cocky attitude, but he seemed scared anyway. I guessed seeing a man about to kill you with a P4 suit would be disturbing.

–Naive...–I started to laugh under my security suit; with the suit on they would not even be able to give a picture to the police if they survived. –Don’t you understand you’re already dead?

I took the bottle out and sprayed them. In less than an hour they would be dead. They were not able to escape because the bacteria made them suffer since the first second that it contacted their bodies; even standing up was impossible.

Once I returned to my car, I crossed out the names Ernest, Hobbe and Fontaine from my list while I remembered how much I had enjoyed watching them squirm while their skin got destroyed. It was a new experience for me; I had never seen my victims suffer directly, and I simply loved it. Watching how justice was made was priceless.

I would have stayed longer enjoying myself with the image of the three of them dying, but unfortunately, I had another plan that same night in a place called *Devtech*.

This time was much simpler. Only two people: doctors Clark and Olds. They were the owners of a small bioinformatics solutions company where the only workers were themselves. This way no unnecessary victims would die.

I was proud of what I was achieving. The twelve bastards that ended with Eve’s life thought that simply by dissolving the company that killed her, would be enough to get ride of the blame. They would never have guessed that I was going to go after them.



Atlas woke up at 8:46 with a message from Dr. Irza that said: ‘*The Countdown Murderer strikes again*’. He would have felt better if he had slept for two more minutes, but he had work to do. He got dressed and went to pick up his boss directly at her house.

–I’ve been investigating by myself. I’ve found Alan Convey, doctor in Synthetic Biology. Direct business competitor in the field of Biotechnology. – Irza believed in her instinct. –Some of his work is quite interesting for our investigation, for example



the ones about improving bacteriologic hazard and controlling their life cycle. We might have found him.

–I’ve heard of him. –answered Atlas. –He’s a complicated person without a doubt. When we finish at the next crime scene we can visit him. If you get any information at the end of the day, I’ll invite you to supper. –When he finished the sentence, he winked and Irza felt like a little girl.

The crime scene showed the same as always: nothing. The three bodies were deteriorated but without a trace of any microorganism. Unlike the other crimes, the victims died around 3:00; this meant that the victims were waiting for the murderer at their office. This made Irza think that they must have had some kind of connection and they could see it coming.

When they left the crime scene, Atlas and Irza went directly to talk with Doctor Alan Convey. They followed their GPS indications to get to an enormous mansion in the middle of a forest in the outskirts of Paris. It was more a palace than a scientific laboratory.

–I’m glad to see you. I’m Dr. Convey, but you can call me Alan. What is the purpose of your visit?

–Let’s see, twelve people who are your enemies in the Biotechnological industry have appeared dead. We would, first of all, want to warn you in case you are the next target. –Irza took a few seconds to breathe before dropping the bomb. – In addition, we would like to know what you were doing the last few nights around 3:00 and 4:00 and if someone could corroborate your alibi.

–Miss, are you incriminating me? –Alan seemed upset. – I won’t lie to you; I’m glad those people are now buried underground because it makes my way much easier. In spite of that, I would never use my sweet creations against my enemies.

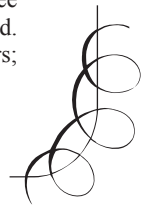
–Are you suggesting that you actually have bacteria with the same characteristics as the ones used in the crimes? –Atlas asked.

–Mister, in this house I have almost everything you can imagine and I have an area reserved for bacteria which could destroy any human being. How could you even question it? –Atlas hated Convey’s ‘on top of the world’ attitude. – If I were you, I would try searching for *VV Biotechnologies*. Who knows? It might be the connection between ten of the victims.

Before going back to their department, Irza and Atlas stopped in a Chinese restaurant and took their supper to go; they were ready to work for a couple more hours in her office.

The building was empty; everyone had already left. While they ate on her desk, they looked for information about the company Alan Convey had talked about. To their surprise, there were not many details in the Internet; they had to turn to the police records to find it and still little information was found.

VV Biotechnologies was a company created eleven years ago by a group of twelve groundbreaking scientists. Their idea was original and new: they wanted to modify bacteria and other organisms like plants so that they were capable of having healing abilities. However, it seemed as if it was not such a good idea because three years later the company dissolved and from there, four other companies were created. Of all the victims up to that moment, ten were amongst the twelve cofounders; everything indicated the two left were going to be next.



The next and last names were doctors Clark and Olds. Atlas and Irza hurried to send patrols to *Devtech*, the bioinformatics company created by the two last scientists.

They got there late... 15 minutes after she had given the order, they called Irza telling her that ‘The Countdown Murderer’ had already been there the night before. Since it was such a small company, nobody had found the dead bodies yet.

Irza burst into tears. She had failed; they were all dead and the murderer had won. But there was Atlas to take her in his arms.

–Calm down, there’s nothing you can do now. –he said.

–Yes there is. – she stuttered –I have the feeling the closure of *VV Biotechnologies* has something to do with all of this.

–You are going to keep investigating, aren’t you?

–Yes, I won’t stop until I find that bastard. –she kept on crying.

–Ok, I’ll stay with you. But excuse me for a moment first; I have to go the bathroom. –Atlas got up and left.

Irza started her search and as she read news from years ago, she finally found something interesting. Supposedly, the company dissolved due to a medical negligence against E. Delacroix, who died after testing with one of the company’s experimental drugs. All of this was off-the-record information and all the culprits ended up unpunished.

After this discovery, she searched the civil registry of Paris and looking by the deceased date and screening by the surname, she found Eve: a deceased young girl who died by natural causes the same year *VV* closed. In her record, only one family member appeared: Atlas Delacroix.



I crossed out Clark and Olds from my list of names. My plan had succeeded but I still had a couple of things to finish. I exited the bathroom with my suit on; I did not want to leave any trace. I would have preferred not doing it, but Irza was figuring out too many things. If she found Eve, she would get to me. I did not think it was fair that I got thrown in jail for doing the job of hundreds of police officers I tried to contact to solve Eve’s case.

I approached from behind and saw the picture of my sister on her screen. She must have seen my name already so I tackled her and hit her on the head with a garbage can I had taken from the bathroom.

Once she was unconscious, I made sure I left everything as it was. I arranged all the things on her table and closed the information she was looking at.

When I finished I was thankful I had disconnected the security systems the night before so I was able to leave the building without problems. I got in the car with all my equipment while I carried the girl to take her home. When I got there, I went down to the basement and left her unconscious body there locked up; that would give me time to think what to do with her.



Irza woke up in a white room, with no windows and full of laboratory material. Her last memory was discovering that Atlas was the murderer she was looking for. The only exit was a metal door going up the stairs where suddenly Atlas appeared.

–Irza... I'm so sorry I had to bring you here this way. –He spoke with a very impersonal tone, completely different to what she was used to. Probably, all the time they spent together at work was a fake. –I could not let you uncover me.

–But, why did you do it?

–I never had a father and when I went off to college, my little sister lost her direction... my mother only knew how to drink and was always drunk. Eve started to drink as well and in no time she got on drugs. It was an auto-destruction spiral. –Atlas took some air; he seemed uncomfortable telling that story. –Every day she spent even more money on drugs and in the end the only way she found to pay for them was trying new experimental medicines in the *VV* Company. Those bastards didn't care about my sister's health; they only cared about their money.

–And why didn't you try to help her? –Atlas was still at the top of stairs; he did not go down to the basement.

–I did. I postponed my Microbiology studies and went back home with my mother and Eve. I tried to control her every second to avoid that she had drugs and I actually managed to do it until my mother suffered an ethylic coma. While I went to visit her at the hospital, those *VV* bastards called my sister and offered her a new experimental treatment to eliminate her drug addiction. Eve accepted it because she thought it would make our lives easier. –Irza was horrified with all the experimentation that was going on without anybody knowing. –One day she came to the hospital to visit our mother, she told me about what they had done to her: they had introduced synthetic bacteria in her brain that could supposedly control neuronal receptors to relax her withdrawal symptoms.

–That's crazy! Why didn't they experiment first on animals?

–As I discovered later on, they did but not one had given a positive result. Even so, the twelve scientists guessed that it could work for humans. They were wrong; my sister died two days later, completely unhinged and mad. The bacteria in her brain made her lose track of time and space; she ended up killing herself during a hysteria attack. –Atlas' voice started to tremble. –When my mother found out, she also died... of sadness I guess. I was left all alone.

Irza started to cry; she was scared of being there and it was a horrible story that made her feel uncomfortable when she understood Atlas and his motives.

–After that, I continued with my studies and graduated with honors. I finally got a job at the scientific police department; a very useful thing because it let me track the twelve founders of *VV*. Those stupid bastards dissolved their company and their crime was kept a secret. But I could not forget it so I started to design my revenge... they had to suffer with the same weapon they used to destroy my family: a killer synthetic bacterium. –The man seemed proud of his creation. –And finally I feel free. There is only one thing left to do before I can consider justice is made.

Irza suddenly noticed that it smelled like gas and understood what Atlas' last intention was: to die. He took a match from his pocket and lit it causing a gigantic explosion in the upper floor where he was still standing. The house started to burn down. She ran up the stairs that were the only possible exit. Atlas was not there anymore so she walked through the flames and, after almost fainting because of all the smoke, she finally got outdoors.



She lay on the ground watching everything burn and all of a sudden another explosion destroyed the rest of the house; nobody would be capable of surviving that.

When the police arrived at Atlas' house, Irza had to explain everything that had happened and how Atlas was 'The Countdown Murderer'. She also affirmed that he had to have died in the house because she actually saw how he lit the match. Everything seemed to come together for the police and investigators. The case was closed because they had a concluding story that made sense, and even though the rests of the man were never found, they accepted that he must have burned to death.

In spite of everything, Irza could not stop thinking about why he kidnapped and tried to kill her. Atlas had very specific objectives and she did not fit in his pattern. In addition, the explosion seemed to be prepared so that she could have the chance to survive and escape. It was as if 'The Countdown Murderer' tried to make sure that somebody saw him 'die'.

If Atlas actually survived the explosion or not, was a doubt that followed Irza until the day she died.



That night I had another mission. The days passed as I studied the stories of all the scientists I knew and if someone did not follow the laws, I would go to his house and get him.

As time passed, I created a new bacteria a bit more... how could I qualify it? ... Silence; yes, that's it. I used the same 'vital clock' as the one before, but this time death was caused by a heart attack: the bacterium paralyzed cardiac muscle and once the host was dead, it would auto-destroy itself making it seem like a natural death.

I did not have to use my suit anymore because I was vaccinated against the bacteria so it would be impossible to affect me. However, I kept on wearing it because it made me feel right and it would show my victim how I really liked to be. Besides, it was the only thing that was always the same, because I had to change my name every time I traveled and I modified my appearance to avoid being recognized.

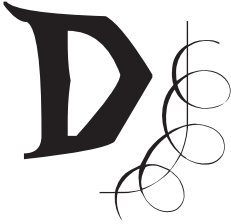
My life was completely perfect; I went from place to place searching and tracking all the scientists I considered to be bad so I could destroy them and purify the scientific world. I was offering a service to all of humanity.

Maybe, the only thing I missed was Irza... She understood me and my cause but there was nothing left to do. Each one had their place and the job I was meant to do was to clean the world from toxic people that haunted the lives of the innocent.



THE LABYRINTH

ORIGINAL IDEA *Marina Mañs*



December 19, 205M inotaur's Diary

The delivery had been made: 10 sets. As far as I could understand, the objective was to use it by introducing it in packages against different enemy capos. It will be divided into five small, glass bottles per set with the necessary handling instructions. But in spite of that, it always ended up accidentally falling into someone else's hands that it wasn't meant for. It was their problem, though, and I didn't care because I knew that everyone that was going to handle it was a bunch of murderers.

Right now I am crossing the continent to close a deal with the "power 1" (better not use names here). According to what they told me by phone, it had to do with plants. "Power 1" wants control all of the oil stations that are currently under "power 2's" control. The negotiations were ruled out a while back, and to continue pressuring without attracting media attention, the only thing left was biological warfare. It had always seemed fun to me to sell death; later the deaths end up appearing as accidental outbreaks on television. Many governments and powerful people have been using my products for years, and through bribes and great amounts of money not one detail links me to any of this. They all want to protect me because I have reports that show that nearly all of them have had a "job" done for them and they don't want anyone to know about it. That's why I like the alias, "Minotaur". It reminds me that I have to control a labyrinth of contacts and information so that nobody can get in. No matter what the price is, I have to protect it.

Soon I will disconnect....tomorrow is my last day of work and I'll be able to go spend Christmas with my wife and two daughters. Maybe I'll be able to give my young daughter that trip to Orlando that she has been asking for. As of now, I'm taking them a gift from the place where I've been these past few days. I always do it and they seem to like it.

December 20205St ephanie's Diary

This morning something great happened...Dad finally has vacation! Mom told me that he would be home in a couple of days. For sure this year my birthday present will be a trip (I'm nervous about turning 11!). Caroline laughed at me at breakfast when I told her I wanted to go to Disney World. She said I was too old for that silly stuff, but I don't care. I want to see the princesses' castle! I think she is excited, but she wants to act grown up. This afternoon I went with my mom to the mall to buy a coat. There were a lot of people going here and there and in and out of

stores. I didn't like that. So many people make me nervous. Once I couldn't see my mom, but she didn't take long to come up behind me and tell me not to wander away.

We had pizza for supper and later Carol and I watched a movie that Mom had bought for us. It was very entertaining and it was about a princess that had to save the world all by herself. The princess was a scientist who tried to cure the world of a terrible disease. After watching the movie, I wanted to be like her and my dad.

December 20205M inotaur's Diary

I'm traveling in first class over the Atlantic returning home after the last meeting that, by the way, has ended with a simple order on behalf of "power 1": they want seeds that will overgrow enemy crops when thrown upon them and cause a vegetable population that will be difficult to eradicate. No problem. It's not the first time I have done it and I have them in stock. There are times that I get the sensation that innovating in biological warfare is quite difficult. I can't complain though since this "sale" means half a million more in my account and a new business contact that will give me future happiness.

The idea of the plants is a good one, but the enemy of "power 1" certainly has the advantage. "Power 2" has decided to go a little farther and intends to contaminate "power 1's" drinking water with synthetic bacteria, sold by me, capable of evading any type of water quality control and provoking dysentery. This order would be a challenge as an investigator. The truth is that when I graduated in Biomedicine, I never thought I would end up being what I was today, but I keep the investigator's spirit alive. I'm still excited about the scientific world. For example, Synthetic Biology has become my new passion above all due to its power as a tool in the job I do.

It certainly is fun to be the best "bioweapon mercenary". From time to time, like now, I must provide "weapons" to both sides without them knowing about it. It's during these moments when I feel powerful, being the only one who has all of the information, that I realize how much I really love my job.

December 21, 205St ephanie's Diary

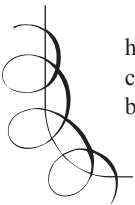
Dad got home today! His job as a doctor (or something like that) keeps him away from home a lot, but I knew he wouldn't miss Christmas. My dad is, according to my mom, a man who lives to help others, even though if you ask him about it, he never wants to talk about it and always makes a strange face.

He always takes long trips to other countries and brings me typical souvenirs. For example, this time he brought me a colorful dress, but one time he brought me a musical instrument from Africa. Another time he brought Carol and me a bunch of candy and chocolate.

After unpacking his suitcase, Carol and I wanted to play basketball in the driveway with Dad and even though Mom told us to let him rest, he came and played anyway. He's the best Dad in the world!

When it was time for lunch, Dad took us to his favorite hamburger restaurant and later that afternoon we went to the zoo. It was super fun!

To end the day, for supper we had Dad's special macaroni that only he knows how to cook. Later we played a board game until I started to fall asleep on the couch. I went up to my bedroom all by myself (I don't need anyone to carry me because I'm not a baby anymore!).



December 21, 205M inotaur's Diary

I finally got home to spend the Christmas holidays with my wife and daughters. My small daughter wants to go to Disney World for her birthday so tomorrow I'll give her the tickets.

Even though I really want to rest with my family, I have the impression that I am still working at home. I feel that when I am with them I have to pretend to be a person that I'm not, play a role due to all of the work that there is lately. The world was not going through one of its better moments and thanks to that, I was able to maintain the lifestyle I wanted even though it caused extra stress.

Even still, I was happy to have a full life that allowed me to make a living doing what I liked to do.

As far as my family is concerned, I've been playing with my daughters, having fun in the city with them, and I think they had a good time today. I'm being a good father.

To end the day, it's the first night with Serene in months. I hope it's worth the wait.

December 22, 205St ephanie's Diary

Finally! Tomorrow we are leaving for Orlando to go to the amusement park. They gave me the surprise right after I got up, when I was about to have breakfast.

Carol was just as happy as me, and Mom seemed glad as well. I wish Dad were too. He seemed a little sad. When they were alone in the kitchen I heard them arguing and I think it was something about his work. When we went to Orlando, he had to make a delivery. I don't care if he has to make a delivery as long as we can all go to the amusement park together.

Today I'm writing in my diary in the afternoon because later this evening we're going to the airport to take our trip. I'll spend the evening playing with Carol, trying to cheer Dad up and sleeping on the plane. It's the first time on a plane and I'm nervous, but I think it's going to be the best trip of my life.

December 22, 205M inotaur's Diary

They've made an extra-official request. It was supposed to be for tomorrow! I only wanted to be able to spend some time with my family disconnected from work matters. At least some time to be able to enjoy my family and take a trip. I'll have to make a delivery while I'm in Orlando resting.

I know the girls won't like me being away for a little while, but there wasn't any alternative. Maintaining contacts was essential in the business I was in. I hadn't gained absolute control of bacterial warfare by putting my family before my work.

The buyer wants to avoid being recognized so he has asked me to leave the package under a bench at the airport. It seems a little dangerous to me, but at least the airport is on my way to the hotel. The buyer hasn't specified which organism he wants, only that it has to be capable of killing. I'll give him a set of a new synthetic bacterium that kills when it establishes itself as "biofilms" in the lung alveoli in anyone who is in a 2-meter radius and then later disappears from its host.

What worried me the most was telling my wife about the delivery. What I finally ended up telling her was the same usual lie: I would be away for a few

minutes to close a business deal in person while we were in the airport and deliver a sanitary order. As I expected, she got angry.

As soon as I get to the airport, I'll drop off the package and after that, if there isn't anything else, I won't work again until I get back from our trip.

December 23205St ephanie's Diary

The plane trip was great! It was full of lots of people who were going to Orlando. There were a bunch of families that were probably going to Disney World like us.

I had fun with Carol and Dad for most of the flight (Mom was sleeping because she was afraid of flying) and then later I fell asleep. When they woke me up, we had arrived to our destiny.

Dad was gone for a few minutes after we got to the airport. He said he had some work to do and took off with his briefcase. Mom seemed upset and that's why I went to look for Dad by myself. I didn't find him but I found a treasure in a black, wooden box under a bench. I'm sure it's something really cool because I opened the box and found a small glass bottle glowing with something yellow inside. I put the bottle in my backpack and left the black box (It was really heavy!). I kept looking around until Dad picked me up in his arms and scolded me for going off on my own, telling me not to do it ever again. The whole family had been looking for me and I had scared them all.

I asked him how his work had gone and he told me that everything had gone well and that today someone in Orlando would have a new prosthesis. He didn't seem happy. It was as if something hadn't turned out as planned.

After that we went to the hotel and it was super cool! The beds are huge and soft and I have to sleep with Carol.

Now we're in the hotel waiting for Dad who has gone to make a telephone call about something he has to do tomorrow. Later we are going out to eat at a nice restaurant to, according to Dad, start out our trip and long-awaited vacation off on the right foot.



Tomorrow we are going to celebrate my birthday in the amusement park with the princesses, the rides, and the castle. I know that this is going to be the best vacation ever!
P.S. Maybe while we wait, I'll show the treasure to Carol and Mom.

December 23205M inotaur's Diary

The delivery had been an absolute disaster. After dropping off the package, I had left immediately in order to respect the client's privacy. After returning to my wife, I realized that my young daughter had gone to look for me. While I was looking for my daughter, the client had phoned, extremely angry, saying that the box was empty and that he would call me back some other time. Just as I hung up, I saw Steph walking around the airport.

Whoever took the bottle would die if he opened it; him and whoever else was near. It's the first time that something like this has ever happened to me. I was used to knowing that people other than the main target died, but it was always due to the buyer's error, not mine. Now I would have to make a couple of calls in order to try to solve the problem.

Could I live knowing that somebody could appear dead because of me?

Extract of the interrogation transcript of Joel Camb as a witness of the death of his wife, Serene Camb and daughters, Stephanie and Caroline Camb.

1-6-2006

NOTE: Uses the following nomenclature:

JC: Joel Camb

CF: Investigator in charge of case: Cormac Freint

CF: Could you tell us again where you were at the moment of the incident?

JC: I've already told you that I had gone to order a cake for my daughter's birthday for the next day. I made the telephone call at 5:23 p.m. It took me 15 minutes and I came back to find this terrible scene. You can check the telephone registers.

CF: You made two calls, one to a bakery and one to the police station. Are you sure they weren't alive when you went into the room?

JF: I'm sure. I went into the room and I found Carol, Steph, and Serene unconscious. I tried to do CPR but I was so upset I didn't know how much time to dedicate to each one of them and who to leave for last.

CF: The security cameras don't show anyone other than you going into the room.

JF: Stop accusing me! Look...Serene and the girls had a rare pulmonary disease. The girls inherited it from my wife. You can see everything in the medical records that I have here. They probably didn't get to their medication in time. When I went in the room, I saw the bottle on the floor.

CF: We don't have that information, Mr. Camb. It is true that while inspecting the room, a bottle was found but we haven't been able to determine the contents.

JF: The medicine was very unstable and had to be taken quickly. They were supposed to take it at 5:25 p.m. I imagine they didn't get to it on time. I should have been there for them.

CF: Don't blame yourself; we all make mistakes. The autopsy showed suffocation due to pulmonary insufficiency, which corroborates all the information you have given us. If it had been a homicide there would have been signs of strangulation or



some chemical compound in their bodies. None of these things were found which contributes to the hypothesis of a natural death. You are a Biomedicine investigator. Could you remind me what you do for a living? We just want to rule you out as a suspect.

JC: I'm an investigator and a doctor. I'm a specialist in implants and prostheses and I take them to different places and perform surgery upon the patient's request.

CF: OK. Everything seems to be in order. I think we can rule out a homicide and declare it as a tragic accident. We are sorry for your loss.

JC: They were the only people I loved in this world; without them, I have nothing...

CF: We apologize for any inconvenience that we have caused you. You are clear of any suspicion and your name as a prestigious doctor will not be damaged in any way.

January 6, 2006. M inotaur's Diary

I should thank this type of people who are capable of moving the world as they please for a little bit of money. Right now any government or private buyer would have already killed me in order to avoid a leakage of all the information I had if it hadn't been for the favor that they had done by hiding the evidence.

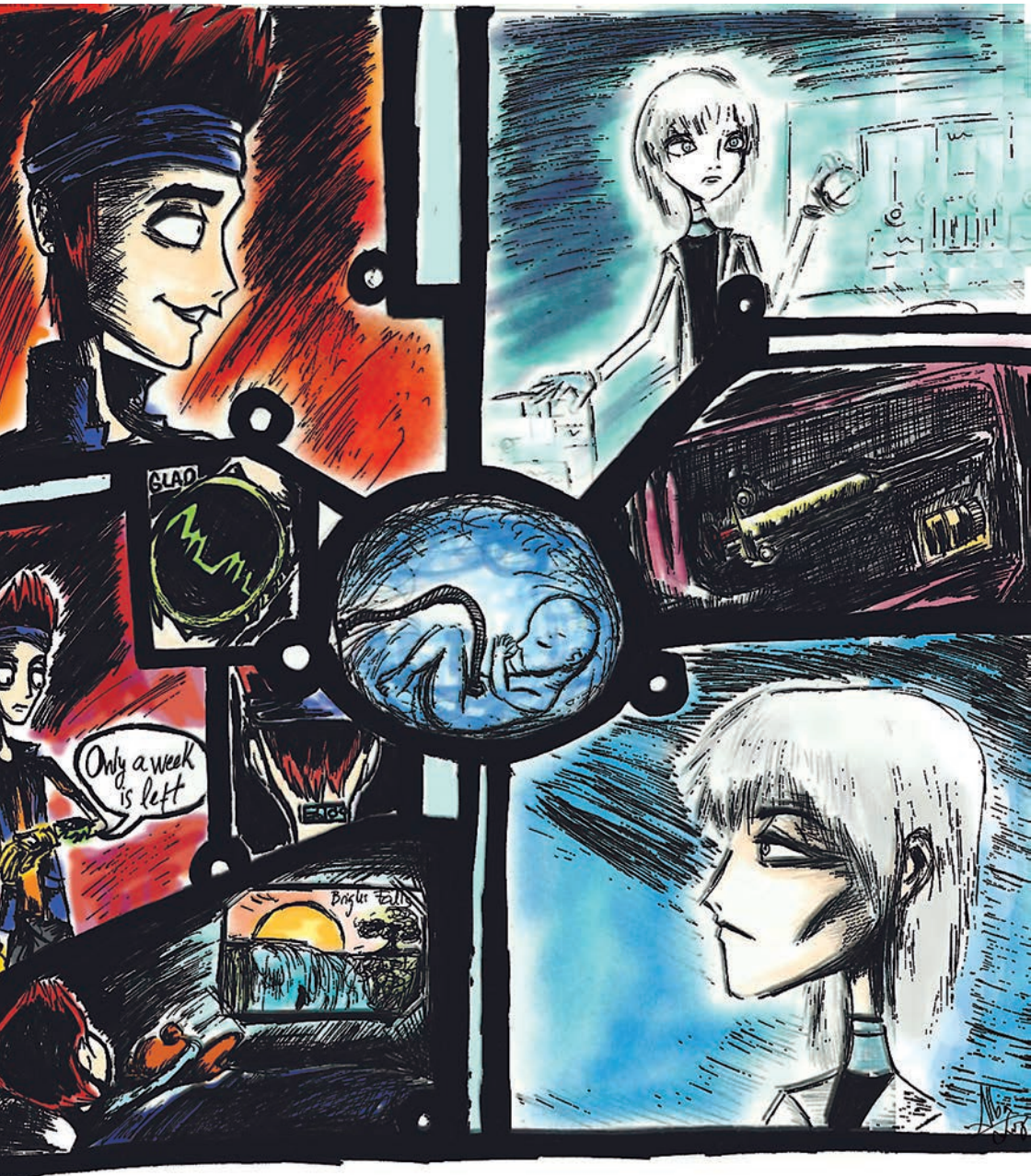
I solved the case this afternoon. I paid to manipulate my wife and daughter's medical records so that the cause of death appeared to be natural.

The truth is that I feared that the alibi was not completely stable. If I had been a police officer I would have asked myself how the three people had died at the same time or at least I would have tried to know more about the bottle and its contents; however, contacts keep the world moving. My clients in the legal, judicial and police forces have been pulling strings and managed to close the case even though it still had some unsolved issues. The interrogatory was just a matter of bureaucratic paperwork; I already knew that I wasn't going to be incriminated. Probably, the investigator, Cormac Freint, was getting a generous amount of money for not asking any dangerous questions.

My wife and daughters died, deceived, thinking that I worked in the field of implants and prostheses and that is what I was going to continue doing; I don't think anyone could understand how I am capable of doing what I do.

The role my family had in my life was necessary to give me stability and balance. During the three days that followed the accident, I felt depressed and downhearted and considered getting out of the "biowarfare" business since it was dangerous to my health and security. Later I reconsidered it: with all the money you earn and the amount of power it entails, you would have to be crazy not to continue being the king of biological warfare.





THANOS

ORIGINAL IDEA *Tonny Ruiz*

Like everyone around his age, Hermann Kovacs, was born on RB-8 from a synthetic ovule artificially inseminated and developed in mechanical wombs. Years ago everything previously explained was done in a natural way; it had its charm but it meant an absolute chaos in the number of births and that situation was incompatible with overpopulation on Earth and its satellite planets. As a matter of fact, the world's overpopulation was so great that the only solution was to send people to prepared structures the size of the moon but orbiting in different lines. RB-8 is the eighth artificial planet of ten and each one has the capacity of about 250,000 people whose goal is to be chosen to return to the blue planet.

Upon birth, each person has a genetic code with the necessary characteristics to develop a useful role for his RB of origin. If they manage to carry out their job in an exceptional way, they earn points. When they have enough points, they receive a ticket to Earth. They have about 300 years to achieve this goal, which happens to be the average life expectancy. That increased lifespan was one of the most important reasons why people had to go live on artificial satellites. The great achievement of obtaining synthetic stem cells capable of generating long-lasting daughter cells supposed an indisputable improvement in the quality of human life, but the negative aspect was the lack of control in the number of people that could live together in the same space.

Kovacs analyzed the Earth from his RB. He was 21 and could only say that he had always lived there and had always cleaned the common areas. He was not genetically designed to be a scientist or engineer; few people, if not any, were back then. The most highly valued positions (science and politics) were filled with carefully chosen people according to certain interests, leaving the cleaning and maintenance jobs to new individuals. But this was not an impediment to be picked to go to Earth and Kovacs had almost enough points to make his dream come true. In a different era one would be sad to leave family and friends behind, but at present nobody had siblings or parents and the friends that one made were not really friends, they were competitors trying to reach the same goal. Due to the fact that they could not send everybody with high scorecards, only two people per RB were sent each month. This is why friendship was not worth the trouble; you could have all the points and die waiting for your turn if you wasted time on nonsense like leisure.

– Hi, Kovacs! It's time to get back to work. – It was Glad, his virtual reality system, always with the same feminine voice. – One more week until you have the maximum number of points.

– I'm going, Glad. I know how much time I have left. – Glad was actually

a control system that all RB inhabitants were obligated to wear to monitor their actions. He did not like having it on him at all times; it was like a parasite.

He cleaned the dining room of his work area. The food that was served could only be salads consisting of genetically modified vegetables so that they were able to grow in places with gravity modules (necessary to simulate Earth) or meat from animals like adapted hens and rabbits. After he finished sweeping and mopping his area, Hermann went to the bedroom area where he was supposed to take off the dirty sheets and put on clean ones. If he managed to make more beds than his coworkers, he would get a little bit ahead on the list of points.



– The time has come this month to pick two new candidates for the test.

– I still think that the process is crazy. We've been trying to get a positive result for more than 50 years and they only thing we've done is fail over and over. – said the geneticist boss.

– Have faith, at some time someone will appear being capable of supporting it, on RB-8 or any other RB and will return hope to the human race. – said Lucius, the most prestigious virologist of the era.

– I'm a scientist...don't ask me to have faith. Divine acts don't exist.

While the two investigators chatted, subject 488 doubled over with pain in a hermetic room in front of them. The vaccine continued without positive results and the dream seemed to drift away slowly day after day.



Kovacs finished his shift and went to have a beer with the only person he considered his friend on RB-8: Lucas Mason. Mason was created purposely with combined genes of the best investigators. The objective was to have a genius working for all of humanity and they achieved it.

Lucius thought highly of Kovacs without really knowing why. The cleaning man liked his company since the scientists were not allowed to go back to Earth, and therefore he was not a competitor and he could relax around him. It was prohibited for scientists to return to Earth since their work on the satellite planets breeding capable people was more important than the possible work that they could do on the planet; besides, the planet already had its own scientist selected.

– Kovacs, Dr. Lucius Mason is coming. – Glad said the evident once again, thought Hermann.

– What's up, Luc? – Lucius only put up with this name if it came from Kovacs.

– I was looking forward to seeing you.

– I wanted to get together with you to talk about something. – Kovacs did not like the tone of his voice; he was going to ask a favor for sure. – I see that you have a lot of points...but I must ask you to decline your intention of going to Earth. It's not that big of a deal; it's the same as here, but with some more colorful things.

– Man, I've been trying my whole life. Why should I stay here?

– Look Her... the world down there isn't as great as they say it is. – Kovacs was



starting to get angry. He did not know that if the doctor told the truth, both would die at that very moment. Damn Glad system thought Lucius.

– You aren't going to make me change my mind. I need to get out of this cage of grey colors and artificial oxygen. I want to be able to see it in person and then if I don't like it, it will have been my own decision and I'll have to accept it.

– I won't be able to change your mind, will I?

– No. Now let's enjoy this damn beer once and for all.

When they finished their beer, each one went to their respective resting areas. There were differences there too. One had almost an entire house in which to live while the other, Kovacs, had hardly 15 square feet of personal space; and even then he had to share it with his Glad system. Kovacs did not understand why his friend had insisted so much about not going to Earth. Maybe he was jealous because he could not go back to the original planet and did not want to give up his only friend. Personal relationships were difficult not only because they required you to be likeable and empathetic, but much more. His genetic code was designed in such a way that establishing a friendship was almost impossible due to the fact that they were all created to be introverted and therefore avoid distractions in work efficiency. Once in a while, there was luck and two people were capable of establishing a bond. There was also the topic of relationships among individuals of the opposite sex: they did not exist. To avoid the possibility of procreation, besides everybody being sterile, they were programmed to feel repulsion towards the other gender. No male felt attraction for a female and vice versa. Kovacs thought that the normal thing was to be born from mechanical wombs until Luc told him otherwise a few years back. He commented that it was one of the worse consequences of having found all of the secrets of the genetic code.



Lucas Mason had been working since he was ten years old in his laboratory (advantages of controlled genetic design) and always on the same thing: finding a vaccine against the virus. There were days he felt like running out and telling everybody the truth, for them to stop trying to collaborate in that big lie they were creating. If he tried to do it, immediately afterwards, his Glad system would kill him and everyone who had heard what he had said. People thought that the virtual system that accompanied them was a tool of help and information, but it was the total opposite. It captured the ambient audio to avoid information filtrations. If something risky was heard or said, it provoked a discharge that melted the person's brain.

The last advance they had achieved was a new version of the vaccine, more stable and with more possibilities of a cure. Now they had to test it on humans; that's how it was done on all of the RB that orbited the Earth. The process was made easier due to the fact that each new human that was created had its own immunological predispositions. In one of the many experiments they had to find the perfect combination between the correct vaccine and the appropriate genetic code. When they achieved it, they would not have to worry about living there and everything would go back to normal as it was ages ago.



The only thing that Lucius was worried about is that the only friend he had been able to find in 27 years was the next possible candidate. Maybe with him, it would work. You never know. In the scientific world one had to sacrifice and you had to take risks if you wanted to win.

– Hermann, I have good news for you. – Glad said. – You have been chosen to return to Earth. Please, pack your important belongings and go to the scientific center in sector 18 of RB-8.

Kovacs smiled like he never had before. He had finally achieved his goal. All of these years of hard work were going to pay off. He would go to his room and pick up the only thing that had any value to him: the postcard.

His personal motivation was to get to the place in the image, “Bright Falls”, on Earth. He found the postcard when he was nine years old while he was cleaning an old man’s bedroom that had passed away in his work area. From the moment he saw the picture, he knew he had to go there. Every night before he went to sleep, he would contemplate the picture trying to imagine what it would be like to see it in person: touching the trees and breathing fresh, mountain air. He had been born for that moment; it was his dream and his reason for living.



Lucius observed how his friend arrived to the central lab with a simple backpack and a smile that he had never seen on his face before. He was with a middle-aged girl that would also be subject to the same thing as the young man.

– Good afternoon, subjects 489 and 490. You have been selected for the “Return” protocol. – announced the Glad voice in the room.

– Hello, Her. You finally got what you wanted. – Lucius was depressed. Due to his genetic code, he did not bother greeting the woman.

– And with pride and eagerness, my friend. What should I do to finally see the Earth in person? – Lucius laughed and changed his demeanor to a neutral mode.

– Good afternoon, fortunate habitants of RB-8. You already know why you are here. I’m Dr. Mason and I’m in charge of informing and guiding you. You’ll take the trip in a space shuttle controlled by a virtual Glad system. When you get there, they’ll be waiting for you and will tell you the role that you will carry out in your new destiny. – explained the doctor to his friend in an impersonal tone. – For security reasons you must be sedated during the trip in order to avoid accidents in the shuttle. I’m the one in charge of administering the sedative and of taking you to the shuttle. Please, follow me.

They followed Lucius through a long glass hallway from which the Earth could be seen. Kovacs was delighted thinking that this was only a glance of what was yet to come. They came to a domed room where everything was white. There were two stretchers and a small, metal table with two small bottles and a couple of syringes on top. Dr. Mason asked the candidates to lie down and relax while he placed various catheters in order to control their vital signs and later administer the sedative. Once Mason saw that the pulse of each candidate was correct, he took the syringe and injected it into the girl’s catheter while Kovacs watched curiously. His turned arrived and the last thing he heard was the voice of his friend:



– See you soon, my friend. I'll miss you.

Once he had Hermann and the girl asleep, Lucius began the treatment. He took the new vaccine that they were experimenting with out of a small portable cooler and he injected it into the two sleeping bodies that lie on the stretchers.

Now it was his turn to wait a couple of days to make sure that the vaccination did not have any collateral effects and after these control days, he would inject the virus that ended with all existence of life on Earth centuries ago.



It was all a big lie that only the people who had to know about it, did: fewer than one in 10,000 on each RB, one of them being Mason. Earth was an inhospitable place and deserted of all human life. The reality was hard to accept.

When the scientists discovered a way of prolonging life, the world changed more than anyone could ever have imagined. What in the beginning seemed like something that would improve the quality of life, had an unexpected effect. Once the system of synthetic stem cells was implanted to prolong youth, this started to be genetically inherited so that after some generations, everyone lived almost 300 years. This meant a change in behavior: before families were small with a few children. This changed and the situation got out of control. Living longer made couples become bored after 40 years of marriage, making them look for other mates with whom they had another ten or eleven children. These children grew up and they acted the same way. Family values were being lost and when they finally realized what was happening, there were too many people on Earth to be able to coexist.

It was then that NASA activated its master plan: relocating thousands of people on artificial satellites orbiting around the Earth. So, they started taking different candidates to the first RB: RB-alpha. As an experiment, it helped them to check if synthetic crops and farms could be maintained stable in space. But something was wrong: people started to overpopulate the RB.

The action taken was necessary to be able to limit and establish barriers to the great demographic problem of the artificial planet: population control. Each inhabitant on the orbiting base was sterilized one by one and investigation of mechanical wombs and synthetic fertilization started, even though they were not going to put the results of the investigation into practice at the moment.

Once a balance was established on the first RB, they began to relocate people to other orbiting bases carefully spread out in line with other bases to avoid stellar accidents. The only requirement to living in outer space was to be sterilized.

The relocation of millions of earthlings on different satellites helped to demographically clear the Earth for some time; but unfortunately it was not enough. Natural resources started to become scarce and the outlook for the future was not good. A biologist came up with a drastic solution to the problem: release a synthetic virus to kill off the less useful people of Earth's society. It was called "Thanos". The selective control started with the vaccination of people chosen for their extraordinary aptitudes: elite athletes, brilliant investigators, wealthy politicians and influential families. All of them were vaccinated secretly a few days before the lethal virus was released.



When Thanos was released, the results were a success. The people who had not been vaccinated perished giving up the world for those who deserved it. This process was not known on any of the RBs to avoid uneasiness on the satellites. Only the leaders of each one of the artificial planets knew what was happening.

But not all of the process was successful. The virus was a modification of a strengthened HIV, and as such, Thanos started to mutate uncontrollably and not even the vaccinated people survived. In less than two years the planet Earth was deserted of human life. The cities became part of the vegetation and animals roamed freely without fear of vehicles and did not seem to care about all the cadavers scattered all over the streets.

Since then, the RBs had become the only reserves for human life in the universe. The leaders on each one began the model that has been in use for centuries: people were given life in an artificial way with different genetic modifications so that they could be complemented with possible vaccine. Every person that was created was misled to think that Earth continued to be a planet full of life and that there was a possibility of returning if you obtained enough points. The point system guaranteed that nobody suspected anything if people disappeared and there were always more people anxious to try and go. The control by virtual intelligence known as "Glad" kept society focused on the objective of returning and made sure that nobody told the truth about what was really going on. The absolute truth: they were created to be experimental subjects in order to find a cure against Thanos (experiments with animals had been ruled out due to the fact that the virus did not affect them). If they achieved it, after thousands of years, they could repopulate the home of humans.



Two days had gone by with subjects 489 and 490 sleeping on the stretchers in isolated hermetic chambers. The vaccine did not have any effect on either of them. They were both genetically equal but the vaccines were two different varieties. That way, by combining different variables, perhaps some day they would find the cure.

Mason approached the girl wearing his special suit with the most resistant version possible against Thanos. If they found a vaccine against this virus, they would be able to find one for any other ones that appeared.

He then injected the virus under the young girl's skin and observed the green line on the pulse monitor. Ten minutes went by and Lucius started to daydream. The average was about 180 seconds of life after the inoculation. They were obtaining some of their best times until the pulse started racing. It all ended as usual: the green line stopped having peaks. They had failed again.

Lucius passed through the detoxification shower and went directly for the second subject: Hermann Kovacs, his friend and his brother if he would have been able to have one. What he began to feel while he watched him asleep and defenseless on the stretcher was indescribable. After having sacrificed hundreds of people looking for a cure, as if their lives meant nothing, he realized for the first time in his life that he felt remorse. What had the poor young man done to find himself there? Kovacs had a dream and he was denying him the possibility of making it come true just as he had done with the others. He thought about how they had been so brutal as to kill



hundreds of innocent people and misleading them with the objective of returning to their homes; their homes were the RBs. Seeing the young man with whom he had spent so much time was a complete turning point in his life.

But what could he do? If he liberated him, the Glad system would kill both of them and everyone who was involved. Lucius Mason had to come up with a plan.

He gave his employees the rest of the day off and took off the suit so that he could think more calmly. When night fell, he knew what he had to do. Glad was made up a system of virtual controllers around one's body that was absolutely worthless if the individual did not have the security chip in his neck. He could try and shock the system by subjecting it to an electrical charge and during the brief short-circuit, extract the chip.

He looked through his equipment and found an electric gun that they used in case a subject accidentally woke up during an experiment. He breathed deeply, convinced himself that what he was going to do was the correct thing and applied the electric charge. He fell to the floor as all of his muscles contracted. He made an extreme effort to take the surgical knife from his pocket, introduce it in his skin and extract Glad's electronic center.

When he was able to get up from the floor, he was bleeding quite a bit but he no longer heard the constant chatter of the robotic system. He cured his wound and stared to do the same procedure but this time on Kovacs.

He had managed to disconnect both of them but the most difficult part of the plan was yet to come: relocate Hermann and himself so that nobody knew who they were. The doctor's intentions were for them to take the identity of a deceased person and modify the personal data so that they appeared in the employee record books 21 and 27 years ago respectively. The next step would be to wake up Kovacs and explain everything to him and everything they had to do.

And that is what Mason did. He administered Kovacs the sleep-inducing suppressor and tried to clear his head with glasses of specially made potable water from the RB's nucleus. Once he came to his senses, Kovacs was lost and disoriented. He was hoping to see the Earth, not his friend again. Lucius explained in great detail everything that was happening and what had happened on the artificial planets during all those years and how everyone that wanted to return to Earth was deceived. Kovacs listened carefully to everything his friend said about the extinction of the human race, the virus to control overpopulation, and about how they had given him the shot. As he listened, he felt proud of his friend for telling him the truth, having done the right thing and having confronted his genetic code that only let him think about science and not friendship.

– Now that I have told you about the past, it's time that you know what the future holds in store for us. – explained the doctor. – We are going to relocate on the RB with new false identities. We will simulate our murders and we will start over.

– Luc, I'm sorry, but no. I still want to go to Earth and I don't care what you say. I was born for it.



Hermann explained his point of view to his friend. He was born and grew up with one simple objective in mind: return to the planet of origin. Having been genetically designed for that purpose, his only objective was to feel that he had



achieved his dream. He did not care if he got to Earth and died immediately after arriving. He knew that at least he would die breathing fresh air.

Dr. Mason listened to his friend's words closely and to the conviction that he showed and was surprised to realize that he understood how he felt; and not only that but also that he was willing to take that trip with him.

Lucius was one of the few people who knew about the "Cloud", one of the few unmanned space shuttles that existed. It existed in case someone came along that was capable of tolerating the virus or someone brave enough to go collect samples. The problem was that the Cloud was a prototype that had various design errors and due to this fact it was capable of reaching the Earth but it could not take off again (once it landed, the energy needed to start it and launch it again was excessive).

The two friends did not really care if they could not get back; they would probably die upon landing.

They did not have to think twice. That same night they headed towards the space shuttle hangar where the old Cloud was waiting. It was an old, but beautiful machine. It was a symbol of liberty and the will to do what is just. As far as Lucius knew, it should not be too difficult to start the space shuttle, and once they had it started, they would only have to set the route and the machine would do the rest.

Being 'nighttime' due to the fact that the Earth was between the RB and the Sun, there was only one person on guard in the hangar and it was not difficult for them to leave him unconscious with a sedative that was used in the laboratory. At night on the RB, there was a curfew and everyone had to go to sleep so that the electric consumption on the artificial planet was minimized.

They got in the Cloud and started it up. The space shuttle's system responded with the same female voice of Glad, which made them feel a little uncomfortable until they realized that it was just a phonetic emulation module and not a control module.

While the space shuttle started to lift off slowly, floating over the ground, Kovacs and Mason gave each other a hug remembering that the whole adventure they were living was for a simple and crazy friendship. What difference did it make if they died? They were already destined to die for breaking the rules on the RB.

– Luc, thanks for coming...you aren't regretting your decision at the last moment, are you? – The hangar's door to space was opening.

– Never, my friend.

Lucius hit the automatic route button, selecting the planet Earth and ordered the system to begin its journey. There was no turning back now: their trip had already begun.



The space shuttle entered the atmosphere activating the security systems so that it did not have to fall in the sea and be able to land on Earth. It was like flying in a paper airplane, gliding smoothly to your destiny to land without crashing. The machine used up all of the fuel that remained.

If there had been a living person at that moment, he would have seen the Cloud land in one of the enormous, cleared fields that surrounded a small, European village. Two shapes with slow, shaking steps came out of the space shuttle.



– We did it. – said Kovacs taking in a deep breath of air with a smile on his face.
 – We are the first ones to see this in centuries.

– We are privileged...but something's not right...Aren't we supposed to die? – Lucius did not understand what was happening. The virus that they experimented with killed almost immediately.

– Maybe the vaccine that you tried on me worked!

– Maybe it did, Her...but that doesn't explain why I'm still breathing. – Lucius started to evaluate different possibilities and in the end he came up with the one that seemed to be the most reasonable. – Maybe Thanos doesn't exist on Earth anymore...it's probable that it had evolutionarily collapsed and become innocuous upon accumulating an excess number of mutations.

– I don't know what you are talking about, Luc...

– Forget it...you wouldn't understand.

– What will happen to all the people on the RBs? Will they continue to live the lie?

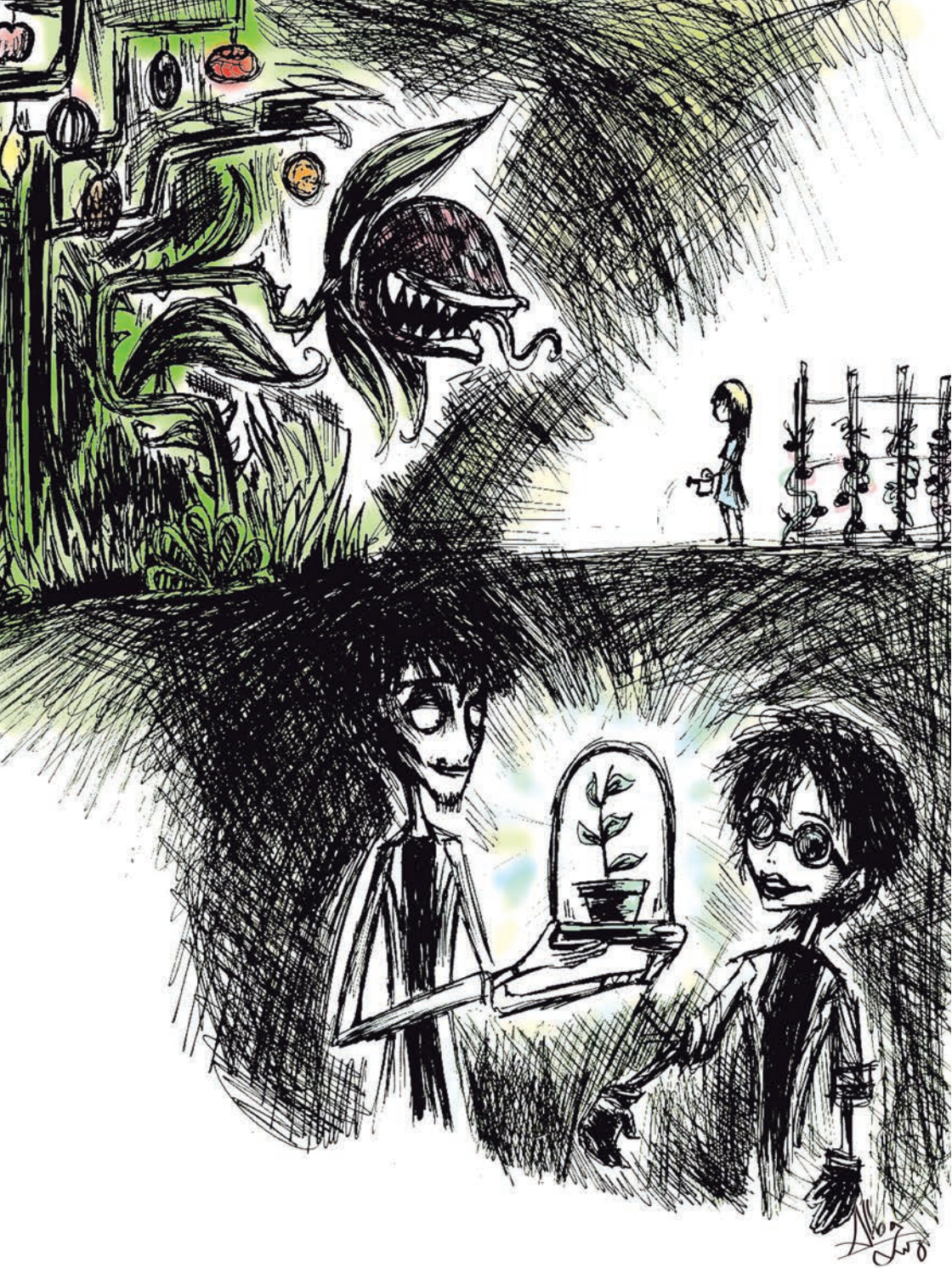
– We don't have any way to communicate it...I suppose that until there's someone else as crazy as us that comes or until someone finds a useful vaccine... – against something that no longer exists, thought Dr. Mason – nobody else will come to keep us company.

They just stood there for a long while observing the golden meadows, the silhouette of the abandoned village, the reddish color of the clouds during the sunset; they listened, spellbound, at the warble of the birds. Then, Kovacs suddenly said:

– That's sad, man...but if we can't do anything, it's not worth lamenting. Do you feel like trying to reach Bright Falls? –asked Kovacs with shyness, showing an old, worn out postcard to his only friend.

And Luc, when he heard this last crazy idea, just looked around and smiled.





THE END IS ONLY ORIGINAL IDEA THE BEGINNING

Guillermo Zafrilla



In the only hospital that was left in City 43 you could find the duty doctor, Doctor Rams. Miss Green had gone to the hospital alone; in a different era it would have been weird for her to go without her husband, but it was not the time to wait for people who were probably dead outside the dome.

Miss Green broke water and was about to give birth to her child. Unfortunately, like in the last 27 deliveries, there was no anesthesia available to make the process easier. They had run out of it too soon. Rams prayed that they did not have to do a caesarean; the disposable material had run out and what was left had to be sterilized by hand without good results. The doctor took the woman to the room that was prepared for labor and tried to make the woman aware. 'It is going to be difficult' he said.

The birth was a total disaster. They had to do a C-section and Miss Green was not capable of surviving. The baby was a precious girl with green eyes and hair, that despite the fact of the little quantity, you could tell was going to be chestnut with reddish reflections. In spite of everything, the most distinctive thing her little pink body showed, was a strange birth mark in the shape of a leaf on her neck, next to her ear. The mark seemed familiar to the doctor, but he did not pay too much attention to it.

Because she did not have a father and she had recently become an orphan, Sister Lorene, one of the most loved women in City 43 due to her work with the orphanage, 'Little Sisters', took the small baby in. It was common for parents to abandon little girls. The jobs that were offered in the dome cities were usually related with construction and maintenance, where men could take advantage of their stronger bodies, while women were not able to earn money for their families. The limited space under the dome imposed a limit of one child per couple so little girls had all the chances of losing. At least, Lorene took all of them into her home.

The new member was baptized as Sher Green. From the first moment Lorene saw the little girl she knew that she was going to be someone relevant in history. She might be known as S one day.



Little Sher had been born in a world completely different to what people had known 50 years ago. A doctor known as Wake designed a revolutionary concept; he named it 'ecosystem kits'.

The doctor amused the scientific panorama of his moment because he was able to create entire ecosystems from a simple capsule that contained all the necessary

compounds. All of these compounds were specially designed by Synthetic Biology and they could work together to grow in a faster way and be much more resistant. This way, if for example you had several hectares of burnt woods, you could repopulate it in a matter of days with a simple commercial kit. The same effect could be achieved in a desert or in a space that was initially not suitable for cultivating. Like this, world hunger was reduced because you could obtain unlimited amounts of food -synthetic fruits and animals- and send them to places where people suffered from hunger due to limited resources.

The enormous environmental achievements that were made with his work made Doctor Wake win a Nobel Prize. The world seemed to live a golden era and all thanks to Synthetic Biology.

But all that glitters is not gold. The advantages that the organisms from the ecosystem kits had were the misfortune of the 'natural' organisms. The plants and animals that started to grow from Doctor's Wake invention began to displace the flora and fauna of every part of the entire world. People started to die because of the new allergens that were in the air: their bodies were not prepared for those 'synthetic' organisms.

Fresh air with allergens became toxic for almost a 100% of the population so the only viable measure was to enclose the cities under gigantic domes with a special ventilation system to avoid the entrance of pollen and external organisms. In less than 50 years, society had lost all type of organization. The world realized too late that it was not a good idea to have been convinced by all the advantages the ecosystem kits offered without even taking into account the disadvantages. And now they were paying their price.



That day Sher turned 18. Lorene had prepared a spectacular present for her: a plant encyclopedia. The orphanage director noticed very soon the love the young girl felt for plants and that is why she spent a great part of her savings to try and rescue that valuable book from a bookseller from the black market.

Lorene told Sher a lot of times that she would have probably been a great friend of S. The first time she told her, Sher did not understand anything and Lorene had to explain the whole story.

S. was an old ecologist that was the only person capable of confronting Doctor Wake years ago. Stories say that S. fought to maintain the last natural plant of the planet alive before they were finally all displaced by synthetic ones. And in fact, S. fought and gave her life for her cause. For unknown reasons, Doctor Wake murdered S. and destroyed the last natural plant condemning the whole world to live under 81 domes.

Sher liked to listen to S.' story; she was like a heroine that was strong until her last breath. She was brave.

When Sher turned 18, she had to decide whether she wanted to live alone in the city she was assigned to and make a living as she could or just stay and help Lorene take care of the orphanage. Almost no girls stayed to help Lorene when they were old enough to choose; they all thought, mistakenly, that outside in the city they had opportunities.



Because she owed her life to Lorene, the young girl decided to stay and help her with the twenty-four girls she had at that moment. Maybe, someday she would try to succeed in the city, but the young woman felt it was still not her moment.

Sher thought it was not her time, but the Physics Doctor, Belz Murphy, did not think the same thing. He arrived the same day the girl turned 18 to propose a very awkward plan: change the world.

Mister Murphy visited the 'Little Sisters' orphanage very often. He had been going there for about twenty years in search of a person that accepted the idea of beginning a crazy voyage. He always looked for the ideal person in the orphanage because he thought that way he would not arouse suspicions in the city, and for now nobody had suspected. Lorene knew about his plan and she was not capable of rejecting it; he promised spectacular things. They then decided that when the moment came, the girl involved should be the one to decide whether she wanted to go with him or not.

–Hello, Miss. Green. I have a proposal for you. –Doctor Murphy talked in a magnificent way. –Would you like to travel in time?

The physicist told his plan to the young girl. His idea was to go back in time to find S. and avoid her meeting Doctor Wake. After that, they would have to save the last natural plant so they could work with it and try to make it more resistant so it could displace the synthetic plants and go back to normal. It was absurd, thought Sher. But Lorene trusted the idea.

–Why don't you go back further and avoid the commercialization of the ecosystem kits? – asked the young girl reasonably.

–The machine that we are going to use to go back in time –Sher thought it was curious that he already assumed that she was going to go– works by links. I'll explain it myself. The machine only goes back in time to a different machine that existed. The first machine which we know about is from the year S.' incident took place. This is why we can't go further in time.

Sher thought this made sense. It was like a temporal corridor to the past where you had to exit a door but you also had to enter a different one.

–How do you know it works? – asked Sister Lorene.

–If I am honest, I don't. However, we can't lose anything either.

Sher felt captivated by the opportunity she was being offered; she could save the boring world in which they lived and breathe fresh air again.

–There is only one inconvenience. hurried to say Dr. Murphy.

–Which one? –Lorene and Sher asked at the same time.

–If you leave, you can't come back. The machine doesn't go forward in time.



Sher Green was in a strange futurist chamber where there was a comfortable chair where she could rest before the trip. She did not hesitate when she accepted Belz's proposal. Lorene was proud of her adoptive daughter. The reason why she accepted that 'mission' was to make a small contribution to the world she lived in. Like Lorene, her guide along her first years of life, Sher felt that she had to give something to the people on Earth before she died. Her gift would be changing the entire world.



–Are you ready, Sher? – said the doctor behind the glass door. –You won’t feel a thing, I hope.

–I’m ready! Hit the button.

And that was what the doctor did. The machine started to produce blue flashes and electric shocks that made the doctor expect the worst. A great amount of smoke appeared around the young girl and after a strong explosion, the smoke began to disappear leaving an empty chair.

Doctor Belz was not a religious man, however he prayed to God that everything would turn out okay for the brave girl.



Sher closed her eyes due to all the smoke in the small chamber and when she opened them again, she found herself sitting in the same chair. She stood up and opened the door and was surprised because the doctor was no longer on the other side of the door. In fact, she was not even in the same laboratory; she was in a type of garage or basement where the time machine just seemed like an old piece of junk.

The girl went up the stairs she found and ended up in a living room. At that moment there was nobody there but it was obvious that somebody lived there because there were photographs and you could see breakfast leftovers on the table. She exited the door and found herself in front of something that surprised her: a bright blue sky. For a second, she thought that she had gone in time to a moment where Wake’s ecosystems had not dominated the world yet and where domes were not needed. Sher had wished it was like that but it was not. The dome was still there but the only difference was that it was clean and you could see the exterior. One of the major problems of locking an entire city under a dome was that it was not easy to clean it from the inside... and much less from the outside.

Her mission began at that moment. She had to investigate about S. and find her as soon as possible. Doctor Murphy did not have a lot of information about her because S. was a complete mystery. Everyone knew she existed because Wake bragged about having killed her, but nothing else was known. Sher’s first idea was to try and contact with some ecologist group; they should know something else.

While she strolled through the crowded streets of that new city, Sher kept on thinking about her next steps. Behind her, was a young boy running as fast as he could while he pushed everyone aside. A tall and stocky man that did not seem very friendly was chasing him. The young boy crashed into Sher making her fall down and against all odds, instead of keeping on running, he stopped to help her, risking being caught. Once the girl was okay he continued running and she decided to follow him; he could be her first contact from the past. They began running together and after a long time, escaping through dark passages, they lost his pursuer.

–Hello. –said the boy, still panting. –My name is Rams, and yours?

–I’m Sher and I need your help to solve a problem.

–I think I owe you a favor because you helped me escape, so spill it out. –Sher liked his friendliness. The boy looked like he was about 16 years old.

–I’m looking for someone called S. This person must be related with ecologist groups and she has something I have to take care of.



–You couldn’t have been luckier! Do you know why that man was chasing me? You are really weird you know that?

–No, I don’t.

–He’s one of Dr. Wake’s goons. He wanted to chase me so he could get to our secret meeting place. I belong to a green group.

–Why would he send bullies against you?

–The enormous amounts of money he has earned with the ‘ecosystem kits’ have made him mad. People say that the doctor thinks that the fact that synthetic plants and animals dominate us is just natural selection. They are the strongest organisms and that’s why he doesn’t want anyone to attack them; he doesn’t want us to interfere in nature’s course.

–But he was the first one who interfered in the natural world!

–I’ve already told you that he has lost his mind.



Rams opened the garage where he met with his friends with a small silver key. There was no one in the room; the walls were filled with pamphlets and there was a small dirty kitchen full of trash.

–Do you live here? –the girl asked amazed and hoping the worst.

–I do! I’m an orphan... I don’t have anything better. At least I can study quietly here. I want to pass my exams so I can study Medicine. –Sher really liked him. She knew how difficult it was for a young child to live without parents. –Come on, it’s time to eat. I’ll cook something. –ended Rams.

After lunch, based on Italian pasta from a can, Sher thought about if she could tell the young boy about her mission or not. She did not expect him to believe that she had travelled 50 years back in time to save a plant, so in the end she decided to omit the information about the time travel and she centered all her time on finding S. and the last natural plant.

–You see, Rams... I’m here looking for a very specific thing.

–What is it? You don’t work for Wake, do you? – he started to get nervous.

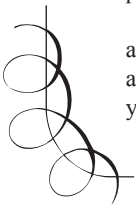
–They’ve told me that somewhere around here there’s a plant. It’s a special plant: the last natural plant of the whole world. –Rams’ face seemed to change; he had to know something about it. –You can trust me... I work with people that are capable of returning life to what it was before the domes.

–I don’t know... why should I trust you?

–Because if you don’t, you’ll be condemning all living beings that are not synthetic.

After a while thinking, Rams thought it would be reasonable to show her what he kept in his small artificial greenhouse in the only closet he had in his ‘house’. He went towards the closet and used a numeric code to open the door that was closed with a security system he had designed himself. Behind the doors was his most precious treasure: a wonderful plant with green and shiny leaves.

When Sher saw the plant, she was moved. She was afraid the plant would be in a different city, which would have been inaccessible because she would have died after exiting the dome, or who knew what other possibilities there were. Now the young girl wondered about what they had to do next. S. had not appeared yet so



what seemed logical was to save the plant in Rams' greenhouse and try to find the ecologist that would confront Wake.

—Oh, you have a really strange mark on your neck! —said Rams when he saw the birthmark in the form of a leaf Sher had behind her ear. —It looks like a leaf!

—I have had it since I was born... it was the only thing my mother left me when she died so I could live.

Sher left Rams studying in his den while she decided to go out and look for some information about S. She was not looking for anything in particular but she hoped she could find a pamphlet or something like that with information about her. At first, she was careful trying not to arouse suspicions while she asked about S. However, in the end she did not even try to whisper and just asked openly. After two hours wandering around the city, the conclusion she obtained was that S. was completely unknown. It was weird; in the era from which she came almost everyone knew about the person who fought against Wake.

She decided to go back with Rams to see how he was doing and see if some of his friends had arrived and knew something about her.

When she got to the boy's house, her entire world came crashing down. The door was broken down, the place was completely destroyed and the posters and pamphlets were all ripped off the walls. The worst thing: the greenhouse was open... and the plant was no longer there. Rams had disappeared and the only things left were his human anatomy books... they must have taken him too. She investigated the scene to try and find some kind of clue about who could have taken him. And there it was; in the book of the future doctor, a huge W covered two pages.

Sher knew what her next step was going to be: talk with Dr. Wake. He was going to pay for all he had done that day.



It was nighttime already. It was not hard to find where Dr. Wake lived. He was almost like a dictator in that dome city. The entire population was terrified due to his threats, such as destroying the dome and letting them all die if someone violated some of the rules he had established.

His house was like a castle with enormous gates around several meters tall. There were a lot of security cameras and spotlights that guarded the mansion. In addition, there were two security towers with two guards in each one. It was going to be insane trying to enter there, but Sher really liked challenges. She stood in front of the main door and called one of the guards and told him she needed to talk with Dr. Wake. The guard that was closer went over to her and tried to throw her off of the property, but Sher was not going to let it go so easily. When the security officer got to the gate, the girl threw herself to the ground pretending to faint. As she expected, the guard opened the gate to help her and just when he was next to her trying to see how she was, she hit him in the head with a rock leaving him unconscious.

She dragged him behind one of the artificial bushes—the plants had to be made out of plastic because it would be dangerous to have synthetic ones due to their



allergens and natural ones did not exist anymore- and there she took his clothes off. Sher would use his uniform to go unnoticed.

Once she was dressed, she went over to the gate and as she had guessed, the guard was so stupid he had left the door open when he came out. Just like that, she was already inside. The uniform was a bit big for her but nobody noticed because it was dark. As long as she avoided the spotlights and the security cameras, nobody would see her. However, she was concerned about the other guards that were patrolling but there was full moon and she could see them before getting too close to them.

She finally made it to the main building by being very discrete and thinking about each step she took. She analyzed the façade looking for a way of getting in without anyone seeing her and while she went around the house, she noticed a small rectangular window at ground level where a light shined. It must have been a basement. When she saw what was there, she was furious: there were several cages with one person in each one. She counted 17 people locked up as if they were circus animals; one of them was Rams. Sher took off the uniform shirt that she had stolen and covered her feet to avoid cutting herself. She sat down on the floor and bent her legs. Then, she kicked the basement window with all the strength she had and it shattered into a million small pieces. The window's frame was big enough for her to jump through without any difficulty.

A half hour later, she had already released all of the prisoners. Even though she did not have the key to the cages, Sher was a specialist forcing locks. She had seen it when she was just a little girl in a spy movie and she learned how to do it by practicing with the door from the room where Lorene used to hide sweets. The cages were old so opening them with a hairpin was no problem.

–Thank you for saving us –said Rams.

–Not at all –she answered. –Now we have to find the plant and get out of here.

They had a huge problem: they were a group too big to escape successfully. Sher started to think about what was correct. Could she use the ecologists and Rams as bait? Would risking the life of the prisoners justify trying to help the future? The young woman started to get nervous; she had to think fast if she wanted to have possibilities.

–This is going to be the plan: you will all stay here while I look for Wake. This will distract the guards' attention and you will have time to escape. –Sher knew she would not be able to live with the guilt if they all died. That is why she decided to give them the opportunity to be free even though she sacrificed her chances of succeeding. –I believe Rams can get you out of here.

Before leaving, the young woman got close to her friend's ear and whispered: 'Make sure you become a great doctor, they will be needed in the future'. The girl exited the door and tried to position herself in that enormous house. The doctor would probably be on the highest floor so she looked for a set of stairs and then went up.



And there he was. In a couch facing the balcony with Rams' plant on a small table next to him. He was with his back to Sher and the only thing she could see was some kind of liquor in his right hand.



–Doctor Wake... I guess.

–Who are you? – he asked without turning around. –I’m going to call security.

–Do it. –She hoped the maximum number of guards would come so Rams had more time. – I’ve come here for the plant.

–You’re a stupid girl... why would you try to conserve a living being that is evolutionarily inferior? Synthetic organisms govern the world because natural selection has favored it. You should respect Mother Nature’s decisions. –Sher was shocked, the man was really not rational... he was disturbed. –You are not going to take it.

In less than two minutes, the room where they both were was full with 23 guards. Sher had only counted 12 patrolling the house and she hoped they were part of the ones there so Rams and the rest of the prisoners could escape through the window. The guards were pointing their guns at the girl’s back.

–How can you talk about natural selection? –the girl said out loud. –You have done just the opposite! You have introduced elements that have disturbed evolution.

–I’ve only accelerated the inevitable process by introducing organisms that sooner or later would have appeared.

While he said those last words, he poured gasoline all over the small plant. Sher feared the worst; she had to act as fast as she could. If she tried to get the plant and run she would die and she would probably also be killed if she waited.

–Doctor Wake... I think you have underestimated the human race. –Sher gave two fast steps towards the plant and she threw it out the balcony. With her last action, one of the guards triggered his weapon without Wake’s order. The bullet pierced the young woman’s chest just as the plant ploughed through the starry night.

The girl’s last wish was that anyone except Wake found the plant.

Rams and the rest of the prisoners were climbing the gate. Sher’s plan had been a success. Thanks to her distraction, they were capable of escaping. While they helped each other to escape, they were all capable of witnessing a dazzle in the highest balcony of the mansion, they heard a gunshot and saw how an object flew through the window. Rams thought for a second about going to see what it was, but then he saw how one the guards appeared and burned the object that had been thrown.

Once they were all out, a young girl asked Rams about his friend:

–Who was that girl?

–Her name is S. –Rams wanted to avoid that her name be published and that Wake found her family. What the boy did not know was that he was creating a legend.



Rams, the duty doctor in the only hospital of City 43 was in charge of a woman who has about to give birth, Miss Green. He hoped she did not have any complications to avoid practicing a C-section. The ‘dome cities’ had a big problem: they did not have enough supplies. At that moment, he remembered the woman from 50 years ago. If he had helped S. instead of letting her sacrifice herself, the world would probably be much different from what they knew today.

The birth was a total disaster. The woman died when they were doing the C-section, but instead, a precious girl with green eyes and hair, that despite the



fact of the little quantity, you could tell it was going to be chestnut with reddish reflections. In spite of everything, the most distinctive thing her little pink body showed, was a strange birth mark in the shape of a leaf on her neck, next to her ear. The mark seemed familiar to the doctor, but he did not remember why.

Sister Lorene took in the girl to spend her childhood in the orphanage. Maybe, when she turned 18 she would achieve something big in her life. Something great like S., the legend that fought for them plenty of years before. Lorene baptized the baby as Sher Green.

While Dr. Rams helped the small girl take her first breath of fresh air –as fresh as it could possibly be inside the dome- in the artificial grass of Dr. Wake’s abandoned house, a small remain of former nature appeared. After the plant was burned, a seed had remained latent: a natural sprout began to receive its first rays of sunlight waiting to be discovered by the human race.



