CONTACT INFORMATION:

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• **Education:** Doctorates in Medicine (MD) and in Philosophy (Ph.D.) in research from the University of Puerto Rico

• **Occupation:** Scientist and University Professor. Director of the Atomic Mass Manipulation Laboratory (AMM) located on a mountaintop near the city of San Juan. Astonishingly, his best students are biotwins Rick and Rita, certified geniuses known for their interest in science. Dr. Upr is assisted in his experiments by Manuel, an extraordinarily intelligent and skilled laboratory technician.

• **Interests:** Understanding the workings of the human body in order to cure the illnesses that afflict Puerto Ricans. Constantly designs experiments to develop new treatments to fight disease. His research is funded by the best organizations from all over the world.

• **Hobbies:** Jogging early in the morning, to keep fit and playing chess.

• **Pet:** Sebastian, a mouse that lives in his pocket after having escaped from several experiments.
PROFILE OF: MAGGIE

• **Education:** Master’s Degree in Nursing from the University of Puerto Rico, specializing in Clinical Studies. Currently studying medicine, a degree she expects to receive very soon.

• **Occupation:** Nurse for clinical research. Carries out initial interviews with patients, assists in the operating room, and updates the clinical data pertaining to research projects directed by Dr. Upr.

• **Interests:** Is fascinated by keeping in contact with the patients and being able to help people in need, which explains the long hours she devotes to her work.

• **Hobbies:** Is passionate about soccer, a sport at which she has excelled at since the age of ten. Also enjoys swimming, beachcombing, listening to music of all kinds, disco dancing, and playing the guitar.

• **Personality:** Maggie stands out for her leadership and for being the disciplinarian component of the group. Often puts an end to arguments and restores order. She acts as a mother figure to the biotwins, who rely on her for advice.
**Profile of: Manuel**

- **Education:** Bachelor Degree in Engineering and Master Degree in Molecular Biology from the University of Puerto Rico.

- **Occupation:** Laboratory Technician at the Atomic Mass Manipulation Laboratory (AMM). Carries out experiments designed by Dr. Upr, a task that helps him discover new treatments to combat the diseases that most afflict our population.

- **Interests:** Is fascinated by working with complicated scientific instruments, which he tinkers with and puts together in different ways to improve their performance.

- **Hobbies:** Martial arts. He recently attained rank of professor in the acrobatic Brazilian art known as Capoeira. Loves fishing, and enjoys dancing Brazilian samba.

- **Personality:** Manuel is very easygoing, but protective with his friends. He is the guardian angel of Rick and Rita, whom he protects constantly. At times he becomes temperamental when things do not turn out his way. He is very competitive, which explains why he sometimes argues with Rick.
**Education:** Doctoral student in Biomedical Engineering at the University of Puerto Rico.

**Goals:** Finishing his doctoral studies in order to establish his own laboratory and obtain the Nobel Prize. Fascinated by experiments, he is especially thrilled when these lead to the discovery of new applications from the area of engineering to the study of biological processes. He is more disciplined than Rita and spends hours making sure that everything is “by the book”.

**Hobby:** Rick’s favorite hobby is playing chess on the computer. Often plays against Dr. Upr who shares his interest in this pastime.

**Personality:** Rick’s intelligence quotient or “IQ” is 186, which qualifies him as a genius. Unlike his sister, he has a large ego and likes to show off what he knows. He finds it difficult to interact with children his age and likes to challenge Manuel and attract his attention. When there is a serious situation, he protects his friends, although they usually end up protecting him.

**Pet:** Ruffles, a highly specialized white cell that was enlarged by the micro-macro machine invented by Dr. Upr.
• **Education:** Doctoral student in Molecular Biology at the University of Puerto Rico.

• **Goals:** Finishing her doctoral studies to establish her own laboratory, to aspire winning the Nobel Prize ahead of her twin brother, Rick. She is fascinated with biomedical research and constantly discovers new and more efficient ways and means to carry out the experiments required for her thesis.

• **Hobbies:** Loves video games, painting and listening to rock music. Also enjoys playing soccer with Nurse Maggie and joining Dr. Upr when he practices his morning exercises.

• **Personality:** Her intelligence quotient or “IQ” of 188 places her in the genius category. Despite her intelligence, she likes to act according to girls her age. She is very lively, extroverted and friendly. Manuel is her good friend, and she defends him when Rick bothers him. Rita is much more practical but not as disciplined as Rick, her twin brother.

• **Pet:** Bubu, a red cell that Dr. Upr permitted her to keep once he had finished one of his biomedical adventures.
PROFILE OF: BUBU

- **Description:** Bubu is an erythrocyte, more commonly known as a red blood cell. He is very elastic and slippery. He was expanded in size from his microscopic dimensions with the micro-macro converter invented by Dr. Upr. Thanks to his flexibility, he can pass through almost any opening.

- **Function:** As a red blood cell, Bubu travels through the blood flow taking oxygen molecules from the lungs to the rest of the body and returning carbon dioxide from the body to the lungs. This process is essential to the survival of human beings. Many of Bubu’s functions are unknown, and the subject of current research.

- **Personality:** Bubu has a good sense of humor. Given his flexibility, Rita uses him as a trampoline or bouncing board when she carries out missions within the human body. Bubu is very friendly and communicates by means of special sign language.
• **Description:** Ruffles is a specialized white blood cell known as CD4. It was given its name because of its rumpled appearance. It also was expanded in size from its microscopic dimensions with the micro-macro converter invented by Dr. Upr.

• **Function:** As occurs with all white blood cells belonging to the CD4 family, Ruffles identifies antigens (foreign bodies), shows the rest of the white blood cells where those foreign bodies are, and how to destroy them. Ruffles is not a good fighter, but it is an excellent guard. Furthermore, it distinguishes itself for its outstanding memory that permits it to retain information on the foreign organisms that have invaded the body for a long time. It communicates with other cells by producing proteins known as cytokins.

• **Personality:** Ruffles has a somewhat somber personality because many members of its family were destroyed by the virus, HIV. HIV is a mortal enemy, and since Ruffles does not have the tools to fight against it, it has to flee. Luckily, Dr. Upr saved it when he was removing blood from a patient infected with AIDS. It became Rick's pet after being enlarged by the micro-macro converter.
• **Description:** Eichaivi is an elongated and very lethal virus called HIV. Despite its microscopic size, it is one of the leading causes of death worldwide. Its name is derived from the first letters of the words that describe it: Human Immunodeficiency Virus.

• **Function:** The main function of the HIV virus is impeding the human body from defending itself against other diseases. It does this by infecting CD4 lymphocytes and causing their death. For this reason, Ruffles considers it its worst enemy. Smaller than Ruffles’ family members, it invades and begins to multiply inside them until it destroys them. When these die, the copies of Eichaivi escape and infect other lymphocytes. The cycle repeats itself with the objective of destroying all the lymphocytes.

• **Personality:** Eichaivi is of a violent nature. It is always angry and ready to attack. Perhaps Dr. Upr’s research will someday be able to modify its behavior and counteract its terrible effects. That day Ruffles will finally be happy.
**Description:** Parami is a paramecium belonging to the group of organisms called protozoans. It is a unicellular organism whose favorite habitats are fresh water ponds. It swims very fast and constantly bounces against obstacles in its path, utilizing hairlike structures called cilia. It feeds on small organisms such as bacteria.

**Personality:** Parami is very hyperactive, perhaps because it has no way of communicating with the beings that surround it. Thanks to its cleverness and its capacity to bounce, it escaped, together with Bubu from an enlarged package of microorganisms being transported to be used in biomedical studies. It is a good friend of Manuel and eats like a glutton.
PROFILE OF: PEBBLES

• Description: Pebbles is the name given by Rita to a white blood cell belonging to a family known as platelets. They are the smallest of white blood cells, and like to travel in groups.

• Function: The principal function of platelets is to stop bleeding and help repair body tissues. To carry out these tasks, platelets such as Pebbles produce a net, made of fibrin, similar to a spider web. This net of fibrin is extremely sticky and very strong. Red blood cells or erythrocytes are caught in the net and thereby stop the bleeding.

• Personality: Pebbles is very mischievous and curious; always alert and willing to cooperate.
**Description:** Antibodies are proteins in the shape of a “Y” that the body produces to identify the antigens or foreign bodies that invade it.

**Function:** The function of antibodies produced by B lymphocytes, when an antigen enters the body, includes three stages: (1) adhering to the antigen in order to neutralize it, (2) sticking to the antigen so the macrophages identify and destroy it, and (3) adhering to the antigen and activating a cascade of chemical events whose purpose is to destroy the antigen.

**Personality:** Antibodies are hardworking and agile. Their ability to recognize foreign bodies makes them meticulous and attentive to detail. Rick and Rita protect themselves against them when they carry out missions within the human body.
**Description:** A macrophage is the largest of the white blood cells. It moves slowly, using pseudopods or projections that form on its membrane. Its body is full of vacuoli that permit it to digest the foreign bodies that it is able to trap and ingest.

**Function:** The function of macrophages is trapping and ingesting the foreign bodies that invade the human body. Since they are slow, they require the help of the antibodies to identify and retain the antigens. The process of ingestion is known as phagocytosis.

**Personality:** Macrophages have an intimidating nature due to their appearance and large size. They are excellent vigilantes and very efficient in carrying out their work.