Good evening everyone, My name is Karen and I \*drops pen\* ahh, uff, my back, I am going to turn 30 this year and I feel it… wait, no, I don’t want to start having pain, I want to be able to dance eternally.

However, this is the real world, and one of the most striking effects of aging is the loss of muscle mass, strength and functionality, after 30 we start to lose between 3 to 15% of muscle mass every year.

And for me at least, that’s and issue, that’s something that makes me dream with a day where an 70 year old man can carry his daughter on his back, where elderlies are self-sufficient and a professional carrier on sports does not end by age 30.

But to understand how is that muscle age, we need to understand a little bit more on how muscle regeneration works.

Let’s imagine, you come out of this talk motivated to exercise after a long time, so you go to the gym and you train hard. But at the next days, your muscles hurt terrible. That feeling is called delayed onset muscle soreness and it’s cause by the injury and inflammation of the muscle, but this is actually a good thing.

After the injury of the exercise your muscle cells are going to pass to different process that will end on stronger an healthier muscle fibers.

And actually, this process is cyclic, going through the phases of Proliferation, Differentiation, Fusion, Maturation and Necrosis. Nature is wise and this is keep on balance of the cells that die and those that replace them.

Multiple proteins participate in this process, making easy to things to go wrong. And with age, things will certainly go wrong.

There are several processes that are affected during aging, one of them is protein being less functional, you can see on this picture that every single point makes it part.   
Aging is complex.

However, as sciences increases, we are finding that these processes can be reversed.

Let’s focus for a moment in out DNA.

We all know that our DNA is unique to us. DNA will be transcribed to RNA that are copies with the genes to be expressed, and during the translation, some of these will become protein that will take action on the cell, like the ones that I mention during the regeneration of the muscle.

However, every single cell of our bodies has the same copy, and even then, we have different cells that look, and function completely different, like a neuron from our muscle cell.

Not just because a cell has a gene, it means that it will be expressed, they are rulled by transcription regulation. And there are several ways to regulate who is going to be expressed. For today, we will take a look on a really small one, even in the world or DNA, we will need to use a magnifier.

Let me introduce you to my friend, microRNA, or miRNA for the friends.

They are so tiny, around 8 to 30 nucleotides, they can regulate several full processes at the same time, they are non toxic since they are just basically RNA