# Will it be possible to regulate human aging with drugs?

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## Introduction

Will it be possible to regulate human aging with some kind of drug? Could healthy elders work for a longer period of time reducing the burden of healthcare? Nowadays, due to the improvement in life quality and the progress achieved in medicine, nearly everybody above 65 on the USA suffers 1 to 3 aging-associated diseases, therefore, elucidating the causes of these diseases and aging itself is becoming increasingly important.

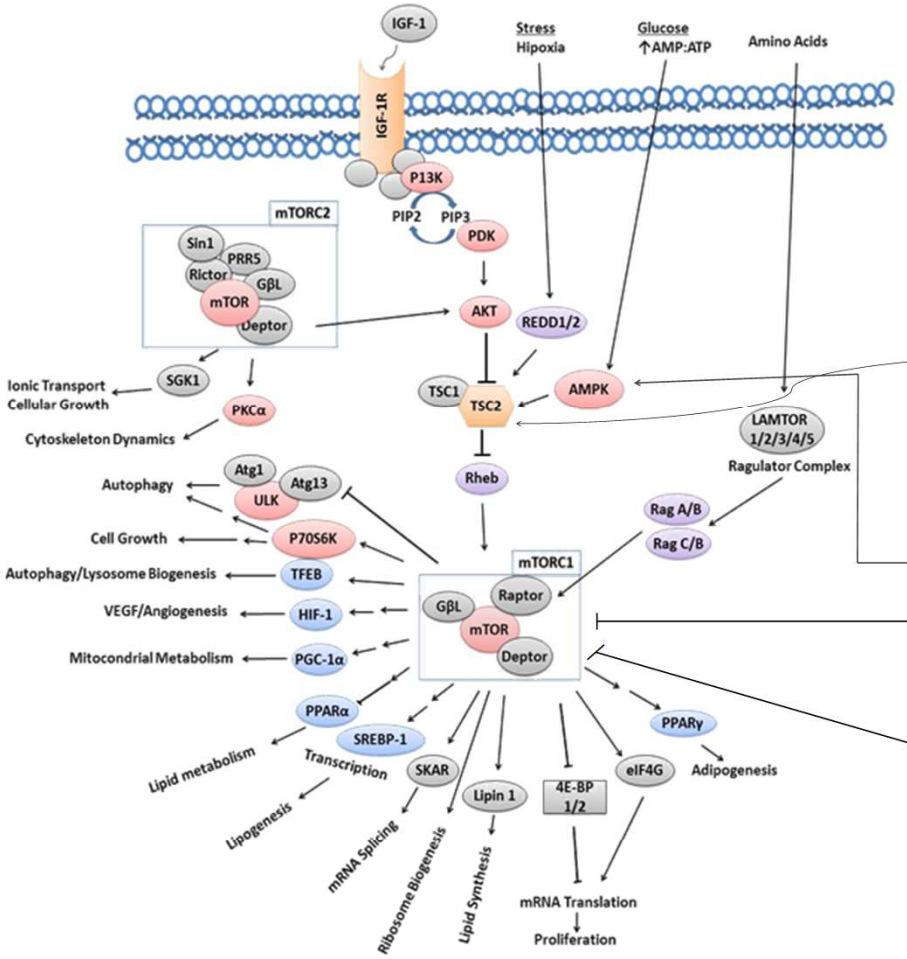
## Aims

The aim of this review is to understand the mechanisms involved in human aging and to discuss the functionality of the most tested drugs to date that potentially regulate them.

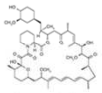
## Methodology

Search for papers in PubMed and PMC. Keywords used for the research: aging, mTOR, rapamycin, caloric restriction, sirtuins, resveratrol. Elaboration of a figure summarizing the pathways and drugs discussed.

## Genetics of aging and tested drugs

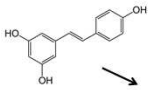



### Rapamycin

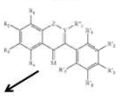


Capable of extending lifespan in mice by 15% in females and 10% in males. Capable of delaying a subset of AAD.

### Resveratrol



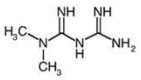
### STACs



### SIRT1

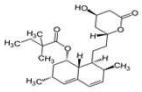
SIRT1 deficiency results in elevated levels of mTOR signalling. Overexpression of SIRT1 in mice brain results in extended lifespan.

### Metformin



Widely used for treating type II diabetes and beneficial for cardiovascular disease and some types of cancer. It extends lifespan in mice by a 5%

### Statins



Statins lead to reduced intracelular LDL-associated cholesterol and prove beneficial in cardiovascular disease. They reduce levels of reactive oxygen and stabilize telomeric structures .

## Conclusions

Even if a drug that slowed aging without secondary effects was found it does not seem likely that we see it approved. Due to the long duration and high costs associated to prevention trials, pharmaceutical companies focus on treatment ones. In addition to that, aging is not considered a disease, so new parameters like fragility and new aging altered biomarkers like microRNA serum levels should be accepted te begin treating aging as a disease.