



GLOBAL WELLNESS  
SUMMIT 2019

# The Future is Catching Us: Rejuvenation Medicine

**Dr. Chris Renna**, Founder, LifeSpan Medicine, US

The future is catching us:  
REJUVENATION MEDICINE

Talk by Dr Chris Renna, DO

**LIFESPAN**  
m e d i c i n e

The future is catching us:  
REJUVENATION MEDICINE

Talk by Dr Chris Renna, DO

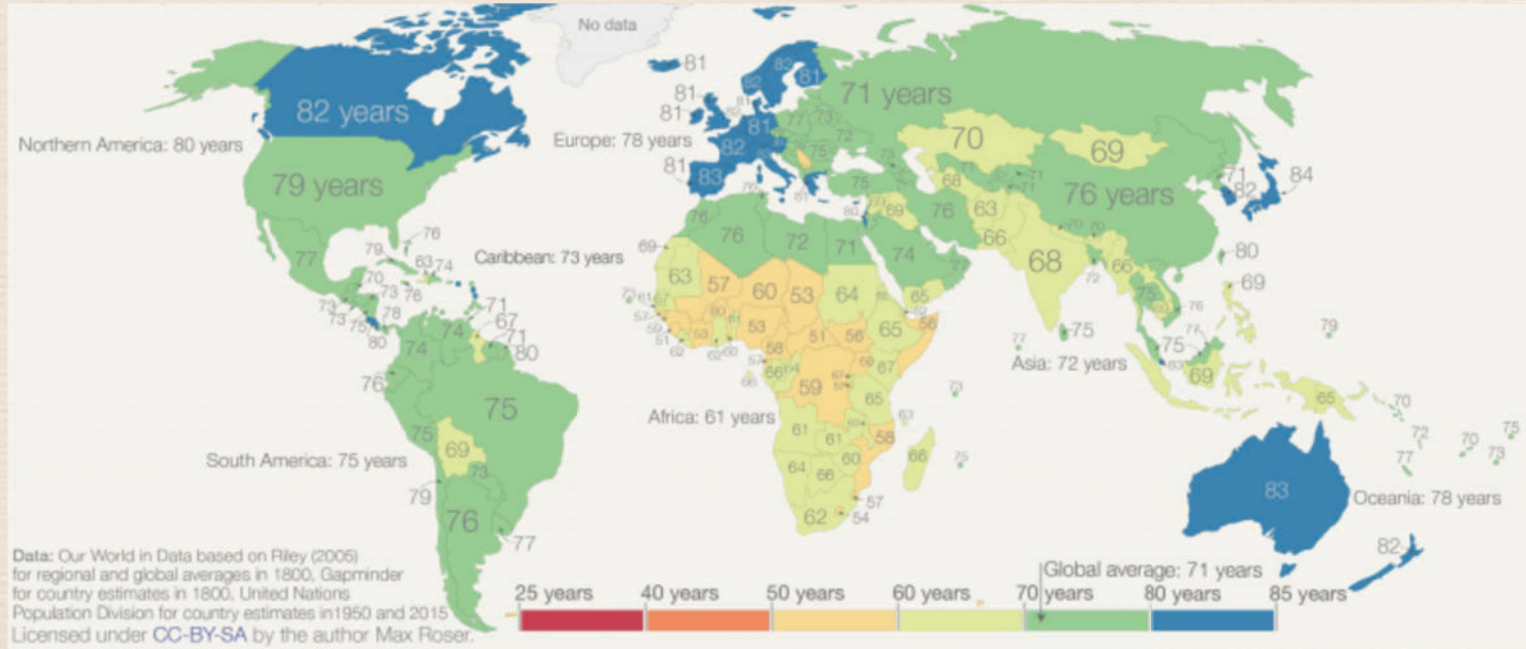
**LIFESPAN**  
m e d i c i n e

The future is catching us:  
REJUVENATION MEDICINE

Talk by Dr Chris Renna, DO

**LIFESPAN**  
m e d i c i n e

# Global Life Expectancy



The future of predicting longevity: Studying the Epigenetic Clock



## EPIGENETICS:

### The Symphony of Life

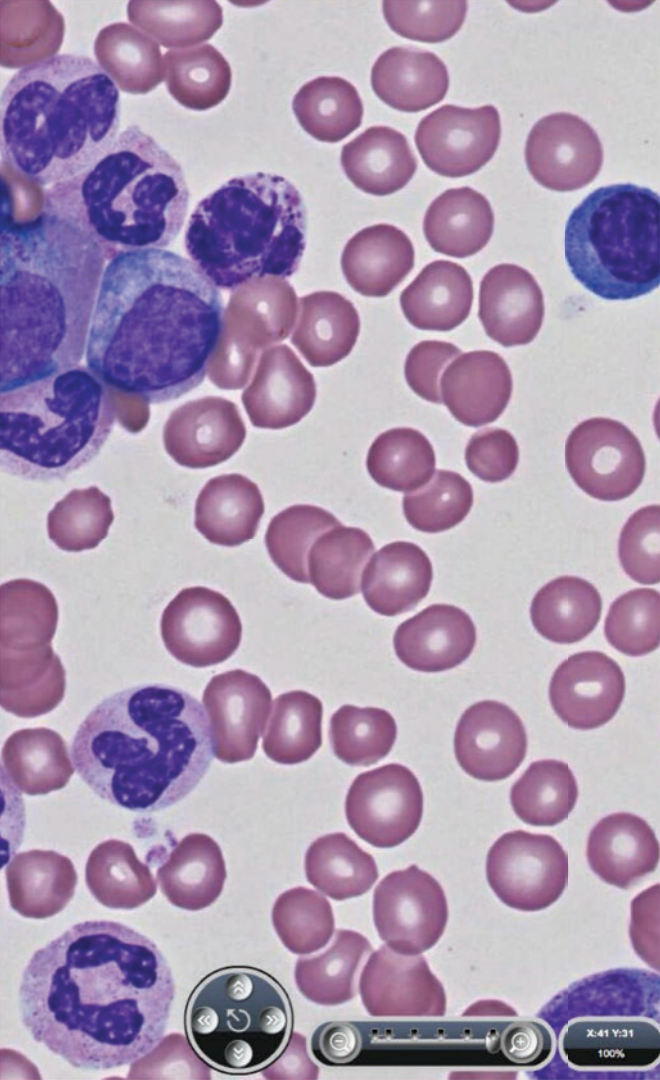
Genes are the instruments and you are the conductor.

### LIFE IS CHOICES

Find ways to positively affect epigenetics to improve your health and prolong your life.

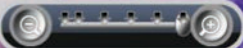


- Aging is the process of getting older and is linked to the loss of function over time.
- Defeating aging means separating the process of getting older from the processes of losing function.



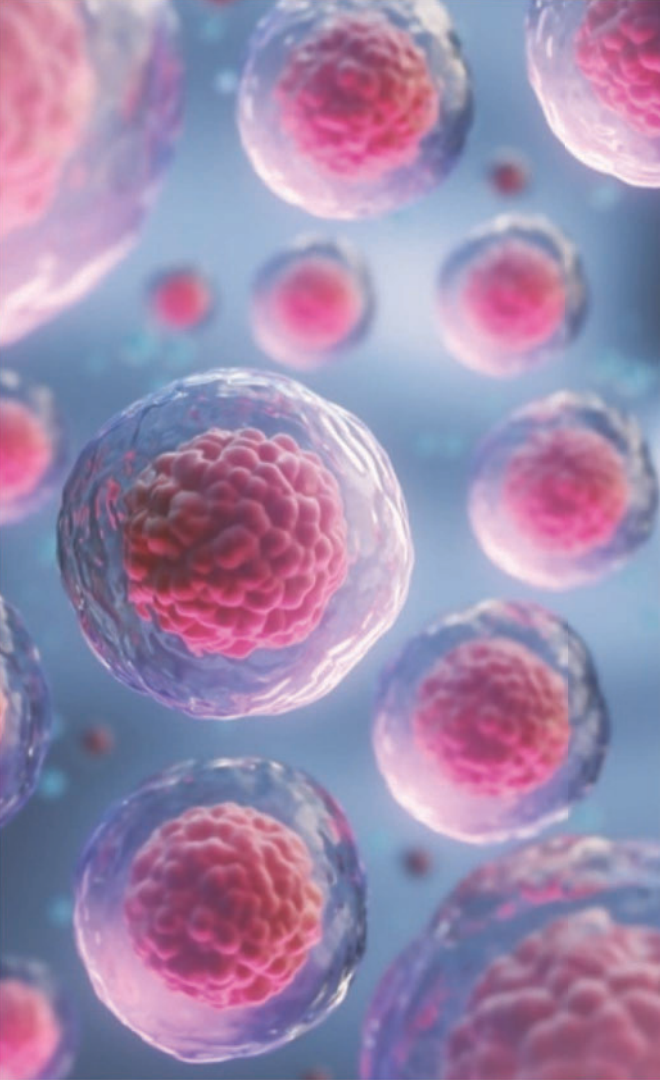
Aging is the biggest risk factor for developing diseases.

The incidence of every disease gets greater as you grow older.



X:41 Y:31  
100%





Senescence: the many processes by which cells lose function.

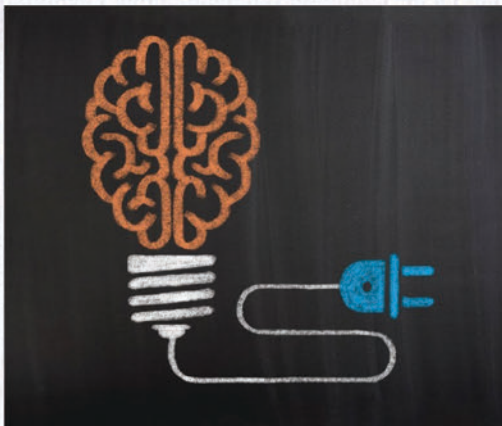
For something to truly be anti aging, it must slow, stop or reverse senescence.

Regenerative medicine

Rejuvenative medicine

- Regenerate means replace.
- Rejuvenate means make younger, more vital and lively.





---

Genomic Testing



---

Peptides



---

Exercise and Supplements



---

Customized Diet



---

Exosomes



---

Stem Cells

James Mellon, author of Juvenescence, Investor and Biotech pundit. In The Economist, in 2018 said,

“the anti-aging market is worth US \$150 billion globally today. Imagine how much it would be worth if the products actually worked?”





| Compound (chemical class)  | Sources   | Medication/supplement name(s)  | Effects on organism   | Clinical trial phase  | Targets   | Side effects  |
|----------------------------|---|--|---|---|---|---|
| Aspirin                    | Meadow sweet<br>Willow bark<br>Blueberry Broccoli<br>Cauliflower Eggplant<br>Kiwi Grapes    | Ecotrin Aspirin 81 Aspirin<br>low Aspirin low strength   | Anti-inflammation Anti-cancer<br>Anti-stress  | Pain reliever/fever reducer (FDA-approved) T2D (phase 3/4) Heart disease (phase 3/4) Atherosclerosis (phase 4) Cancers (phases 1/2/3/4) Obesity (phase 1) | COX-1, COX-2, PTGS2, NF-κB, AMPK  | Diarrhea Headache<br>Loss of appetite<br>Vomiting Weight gain                                 |
| Curcumin (polyphenol)      | Curry spice Ginger<br>Turmeric  | Theracurmin Meriva<br>Longvida BCM-95  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Anti-stress                  | GRAS by FDA AD (phase 2) Cancer (phase 2)   | NF-κB, COX-1, COX-2, TNF-α, p53, PPARγ, TR, Nrf2, FAK, Src, GSK3, AP1, TOR, LOX, AMPK         | Flatulence Nausea<br>Diarrhea   |
| Epigallocatechin gallate   | Green tea Apples<br>Blackberry Carob flour  | Green tea extract  | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Anti-obesity Anti-diabetic<br>Neuro-protective Anti-stress        | GRAS by FDA AD (phase 2/3)  | Bcl2, NOS2, LamR, EGFR, Telomerase, Topoisomerase II, DNMT1                                   | Headache<br>Nervousness<br>Vomiting Diarrhea<br>Irritability Irregular heartbeat<br>Dizziness |
| Fisetin (flavonoid)        | Acacias parrot tree<br>Honey locust onion<br>Strawberry Apple<br>Grapes                     | Fisetin  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Anti-diabetic Anti-oxidant CR mimetic<br>Anti-stress              | Preclinical studies   | Akt, Cdk6, mTOR, PI3 K, ERK   | Not reported  |
| Melatonin (biogenic amine) | Tomato Cereal<br>Walnut Olive oil<br>Strawberry Milk Wine<br>Beer                           | Melatonin Circadin<br>Clocktonin   | Neuro-protective Anti-stress<br>Anti-migraine Sedation Sleep quality<br>Anti-depressive Anti-stress                                 | GRAS by FDA Cancers (phases 1/2/3/4) Glucose tolerance (phase 3) Insomnia (phase 2) T2D (phase 2) Alzheimer's disease (phase 2)                           | MT1, MT2, MT3, GPR50  | Headache<br>Depression<br>Sleepiness<br>Dizziness<br>Irritability                             |
| Metformin (biguanide)      | Chemically synthesized  | Act Metformin Bio-metformin Fortamet<br>Glucophage Glumetza<br>Metformin Riomet                | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Cardio-protective CR mimetic | T2D (phase 4) Obesity (phase 4) Impaired glucose tolerance (phase 4)  | AMPK  | Lactic acidosis<br>Diarrhea Nausea<br>Vomiting Flatulence                                     |
| Quercetin (flavonoid)      | Greens Berries<br>Tomato Broccoli<br>Onions Tea leaves                                      | Quercetin  | Anti-atherogenic Anti-inflammation<br>Cardio-protective Anti-oxidant  | GRAS by FDA T2D (phase 1) CVD (phase 1)   | SIRT1, PLA2, PI3K, pp60src Phosphotransferase, Protein kinases, Cyclic GMP phosphodiesterases | Not reported  |
| Resveratrol (polyphenol)   | Grapes Wine<br>Rasperry Plums Acai<br>Peanuts   | Resveratrol  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | GRAS by FDA AD (phase 3) Cognitive impairment (phase 4)   | Sirt2, p53 AMPK, PGC1-α   | Intestinal upset<br>Nausea  |
| Rapamycin                  | <i>Streptomyces hygroscopicus</i>   | Rapamycin Sirolimus<br>Rapamun   | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | CVD (phase 3) Tubercous sclerosis (phase 3) Cancers (phases 1/2/3/4)  | mTOR  | Suppression of immune system<br>Hepatotoxicity  |
| Statins                    | Oyster Mushrooms<br>Red yeast rice Soy products<br>Grains Cauliflower Onion<br>Apple Orange | Atorvastatin Fluvastatin<br>Lovastatin Pitavastatin<br>Pravastatin Rosuvastatin<br>Simvastatin | Anti-hyperlipidemic Cardio-protective<br>Anti-diabetic Anti-atherogenic<br>Anti-inflammation Anti-Alzheimer's                       | Hypercholesterolemia (FDA-approved) CVD (phase 4) Myocardial infarction (phase 4) Sexual dysfunction (phase 4) T2D (phase 4) Schizophrenia (phase 4)      | Hydroxy-methylglutaryl-CoA reductase  | Headache<br>Depression<br>Sleepiness<br>Dizziness Diarrhea<br>Memory loss<br>Diabetes         |

## FOREVER YOUNG

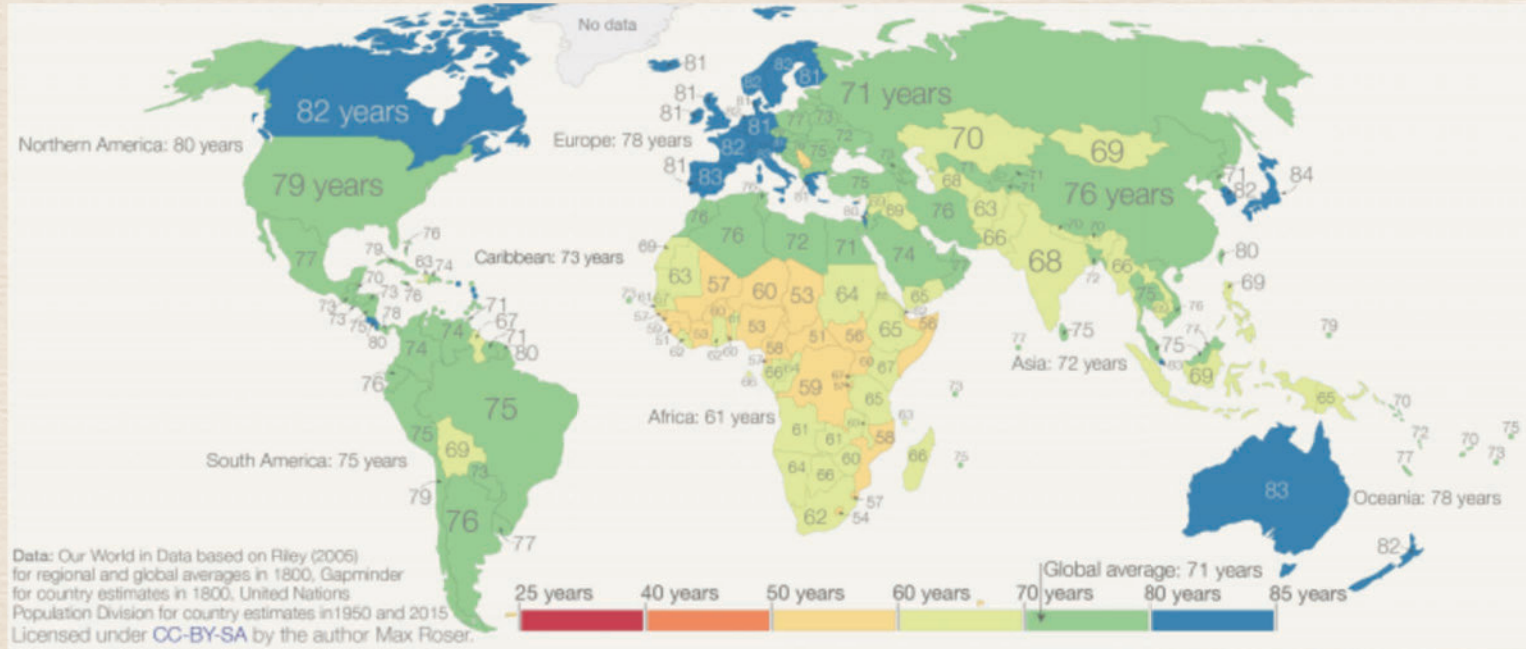
- Do the foundational work, learn how to customize your diet and exercise.
- Monitor and optimize your sleep.
- Identify and address risk factors through conventional medical testing including targeted genomic studies.
- Test for and correct nutritional deficiencies.
- Take the natural agents Fisetin, Nicotinamide riboside, *trans*-Resveratrol, Cat's claw daily and indefinitely.
- Metformin; anti-aging benefits
- Combination of DHEA, Metformin and hGH
- Stem cells, waiting to see
- Autologous exosomes





# Regenerative Medicine: Buying Time

# Global Life Expectancy



The future of predicting longevity: Studying the Epigenetic Clock





## EPIGENETICS:

### The Symphony of Life

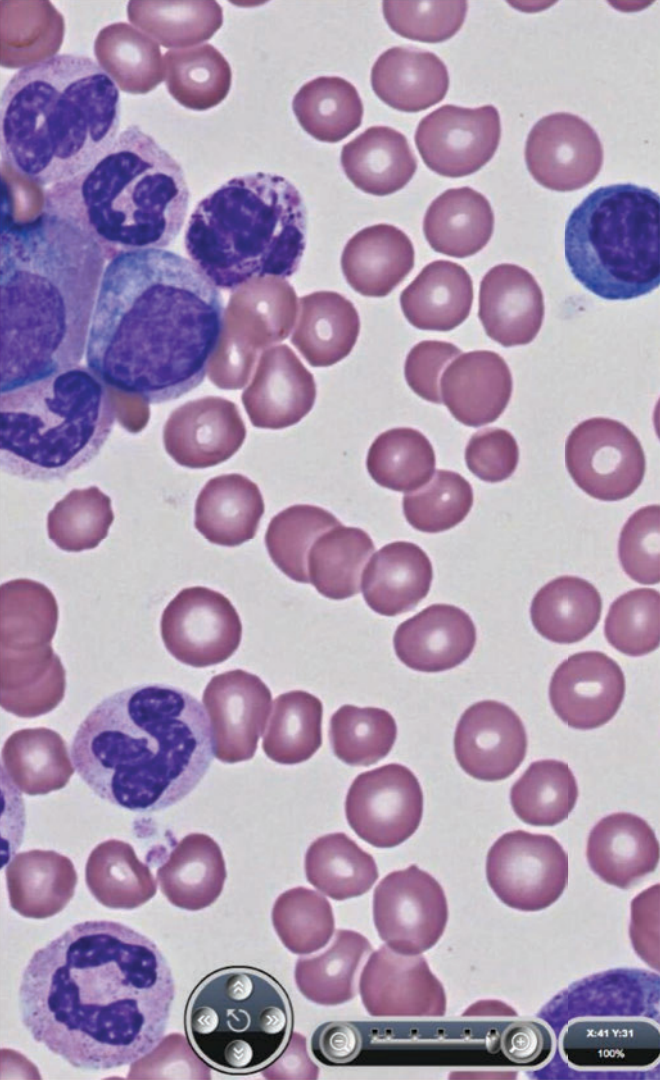
Genes are the instruments and you are the conductor.

## LIFE IS CHOICES

Find ways to positively affect epigenetics to improve your health and prolong your life.

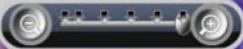


- Aging is the process of getting older and is linked to the loss of function over time.
- Defeating aging means separating the process of getting older from the processes of losing function.

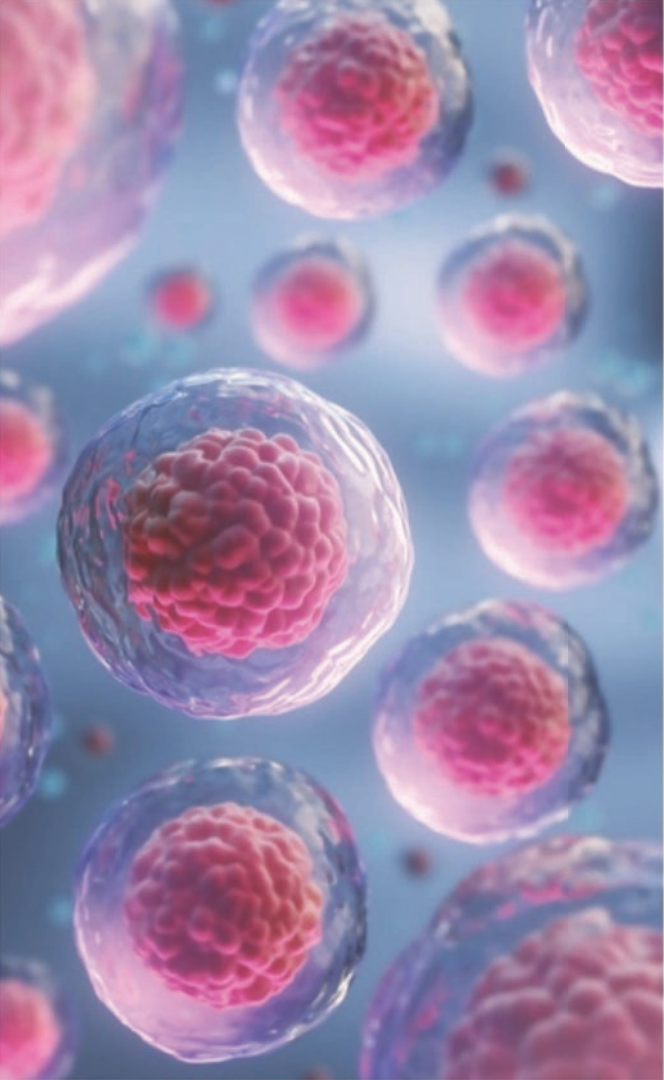


Aging is the biggest risk factor for developing diseases.

The incidence of every disease gets greater as you grow older.



X:41 Y:31  
100%



Senescence: the many processes by which cells lose function.

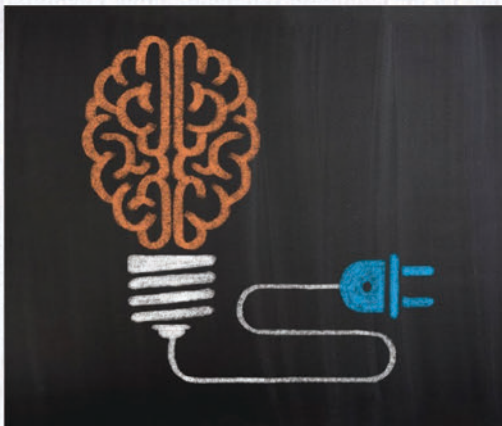
For something to truly be anti aging, it must slow, stop or reverse senescence.

Regenerative medicine

Rejuvenative medicine

- Regenerate means replace.
- Rejuvenate means make younger, more vital and lively.





---

Genomic Testing



---

Peptides



---

Exercise and Supplements



---

Customized Diet



---

Exosomes



---

Stem Cells

James Mellon, author of Juvenescence, Investor and Biotech pundit. In The Economist, in 2018 said,

“the anti-aging market is worth US \$150 billion globally today. Imagine how much it would be worth if the products actually worked?”





| Compound (chemical class)  | Sources   | Medication/supplement name(s)  | Effects on organism   | Clinical trial phase  | Targets   | Side effects  |
|----------------------------|---|--|---|---|---|---|
| Aspirin                    | Meadow sweet<br>Willow bark<br>Blueberry Broccoli<br>Cauliflower Eggplant<br>Kiwi Grapes    | Ecotrin Aspirin 81 Aspirin<br>low Aspirin low strength   | Anti-inflammation Anti-cancer<br>Anti-stress  | Pain reliever/fever reducer (FDA-approved) T2D (phase 3/4) Heart disease (phase 3/4) Atherosclerosis (phase 4) Cancers (phases 1/2/3/4) Obesity (phase 1) | COX-1, COX-2, PTGS2, NF-κB, AMPK  | Diarrhea Headache<br>Loss of appetite<br>Vomiting Weight gain                                 |
| Curcumin (polyphenol)      | Curry spice Ginger<br>Turmeric  | Theracurmin Meriva<br>Longvida BCM-95  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Anti-stress                  | GRAS by FDA AD (phase 2) Cancer (phase 2)   | NF-κB, COX-1, COX-2, TNF-α, p53, PPARγ, TR, Nrf2, FAK, Src, GSK3, AP1, TOR, LOX, AMPK         | Flatulence Nausea<br>Diarrhea   |
| Epigallocatechin gallate   | Green tea Apples<br>Blackberry Carob flour  | Green tea extract  | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Anti-obesity Anti-diabetic<br>Neuro-protective Anti-stress        | GRAS by FDA AD (phase 2/3)  | Bcl2, NOS2, LamR, EGFR, Telomerase, Topoisomerase II, DNMT1                                   | Headache<br>Nervousness<br>Vomiting Diarrhea<br>Irritability Irregular heartbeat<br>Dizziness |
| Fisetin (flavonoid)        | Acacias parrot tree<br>Honey locust onion<br>Strawberry Apple<br>Grapes                     | Fisetin  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Anti-diabetic Anti-oxidant CR mimetic<br>Anti-stress              | Preclinical studies   | Akt, Cdk6, mTOR, PI3 K, ERK   | Not reported  |
| Melatonin (biogenic amine) | Tomato Cereal<br>Walnut Olive oil<br>Strawberry Milk Wine<br>Beer                           | Melatonin Circadin<br>Clocktonin   | Neuro-protective Anti-stress<br>Anti-migraine Sedation Sleep quality<br>Anti-depressive Anti-stress                                 | GRAS by FDA Cancers (phases 1/2/3/4) Glucose tolerance (phase 3) Insomnia (phase 2) T2D (phase 2) Alzheimer's disease (phase 2)                           | MT1, MT2, MT3, GPR50  | Headache<br>Depression<br>Sleepiness<br>Dizziness<br>Irritability                             |
| Metformin (biguanide)      | Chemically synthesized  | Act Metformin Bio-metformin Fortamet<br>Glucophage Glumetza<br>Metformin Riomet                | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Cardio-protective CR mimetic | T2D (phase 4) Obesity (phase 4) Impaired glucose tolerance (phase 4)  | AMPK  | Lactic acidosis<br>Diarrhea Nausea<br>Vomiting Flatulence                                     |
| Quercetin (flavonoid)      | Greens Berries<br>Tomato Broccoli<br>Onions Tea leaves                                      | Quercetin  | Anti-atherogenic Anti-inflammation<br>Cardio-protective Anti-oxidant  | GRAS by FDA T2D (phase 1) CVD (phase 1)   | SIRT1, PLA2, PI3K, pp60src Phosphotransferase, Protein kinases, Cyclic GMP phosphodiesterases | Not reported  |
| Resveratrol (polyphenol)   | Grapes Wine<br>Rasperry Plums Acai<br>Peanuts   | Resveratrol  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | GRAS by FDA AD (phase 3) Cognitive impairment (phase 4)   | Sirt2, p53 AMPK, PGC1-α   | Intestinal upset<br>Nausea  |
| Rapamycin                  | <i>Streptomyces hygroscopicus</i>   | Rapamycin Sirolimus<br>Rapamun   | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | CVD (phase 3) Tubercous sclerosis (phase 3) Cancers (phases 1/2/3/4)  | mTOR  | Suppression of immune system<br>Hepatotoxicity  |
| Statins                    | Oyster Mushrooms<br>Red yeast rice Soy products<br>Grains Cauliflower Onion<br>Apple Orange | Atorvastatin Fluvastatin<br>Lovastatin Pitavastatin<br>Pravastatin Rosuvastatin<br>Simvastatin | Anti-hyperlipidemic Cardio-protective<br>Anti-diabetic Anti-atherogenic<br>Anti-inflammation Anti-Alzheimer's                       | Hypercholesterolemia (FDA-approved) CVD (phase 4) Myocardial infarction (phase 4) Sexual dysfunction (phase 4) T2D (phase 4) Schizophrenia (phase 4)      | Hydroxy-methylglutaryl-CoA reductase  | Headache<br>Depression<br>Sleepiness<br>Dizziness Diarrhea<br>Memory loss<br>Diabetes         |



## FOREVER YOUNG

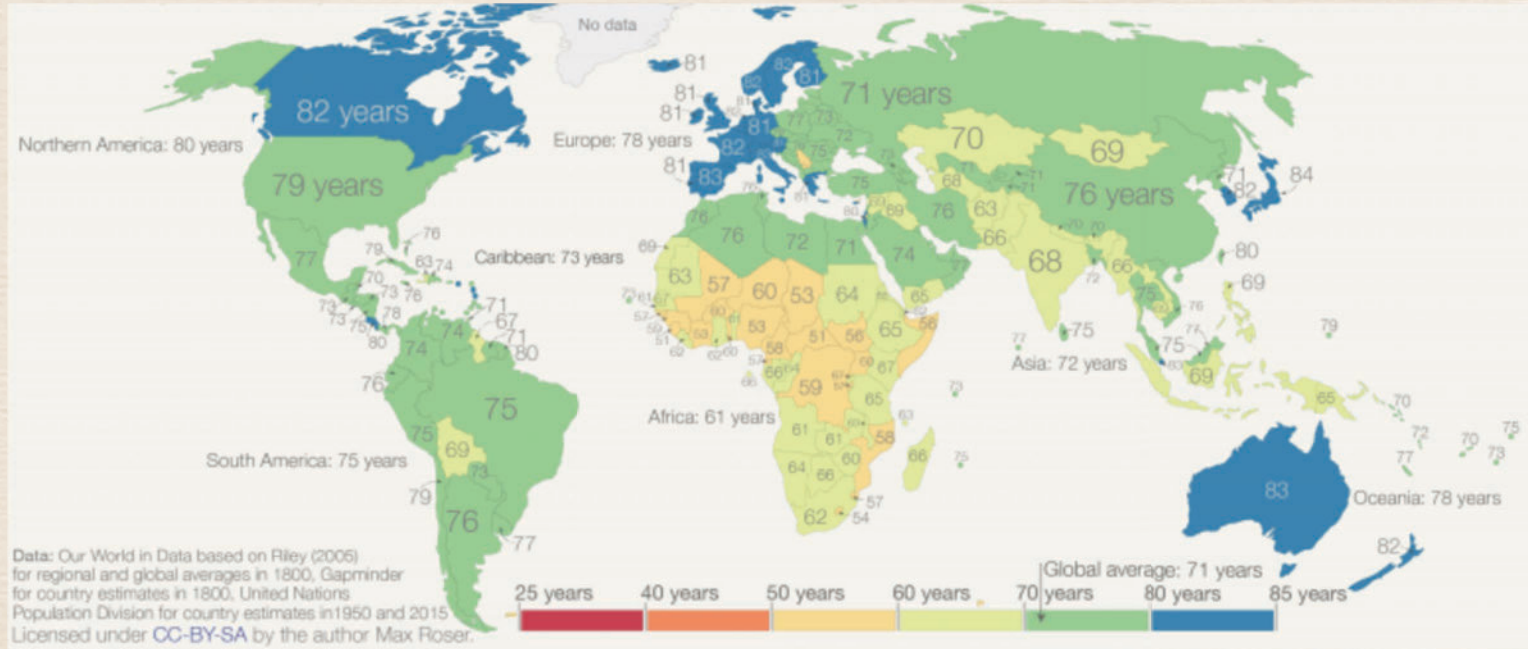
- Do the foundational work, learn how to customize your diet and exercise.
- Monitor and optimize your sleep.
- Identify and address risk factors through conventional medical testing including targeted genomic studies.
- Test for and correct nutritional deficiencies.
- Take the natural agents Fisetin, Nicotinamide riboside, *trans*-Resveratrol, Cat's claw daily and indefinitely.
- Metformin; anti-aging benefits
- Combination of DHEA, Metformin and hGH
- Stem cells, waiting to see
- Autologous exosomes





# Regenerative Medicine: Buying Time

# Global Life Expectancy



The future of predicting longevity: Studying the Epigenetic Clock



## EPIGENETICS:

### The Symphony of Life

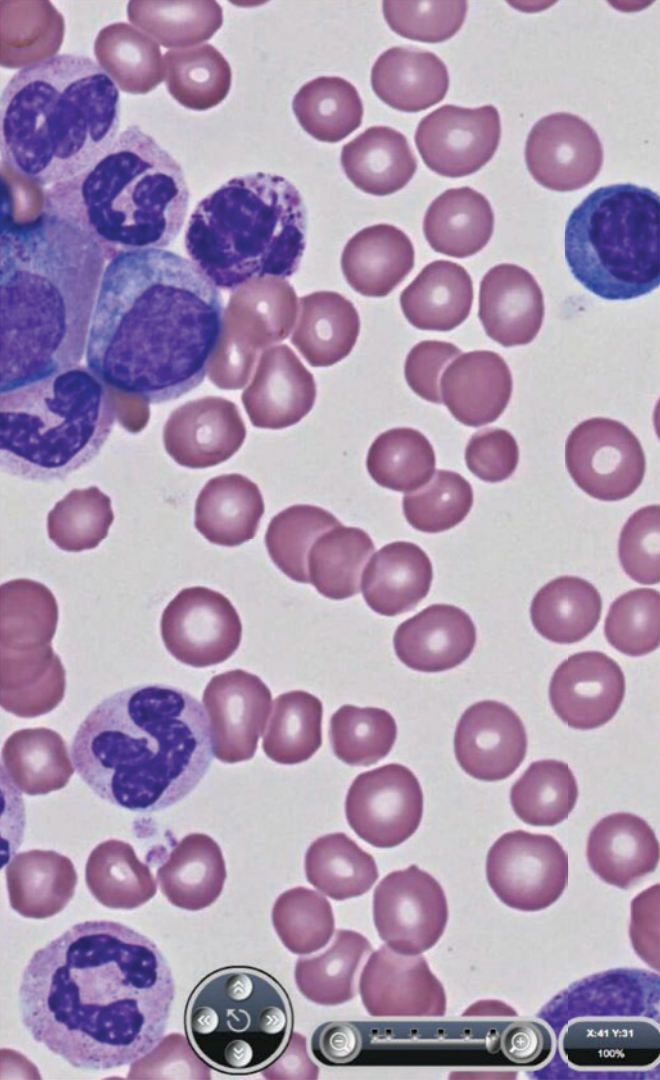
Genes are the instruments and you are the conductor.

## LIFE IS CHOICES

Find ways to positively affect epigenetics to improve your health and prolong your life.

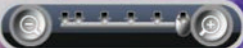


- Aging is the process of getting older and is linked to the loss of function over time.
- Defeating aging means separating the process of getting older from the processes of losing function.

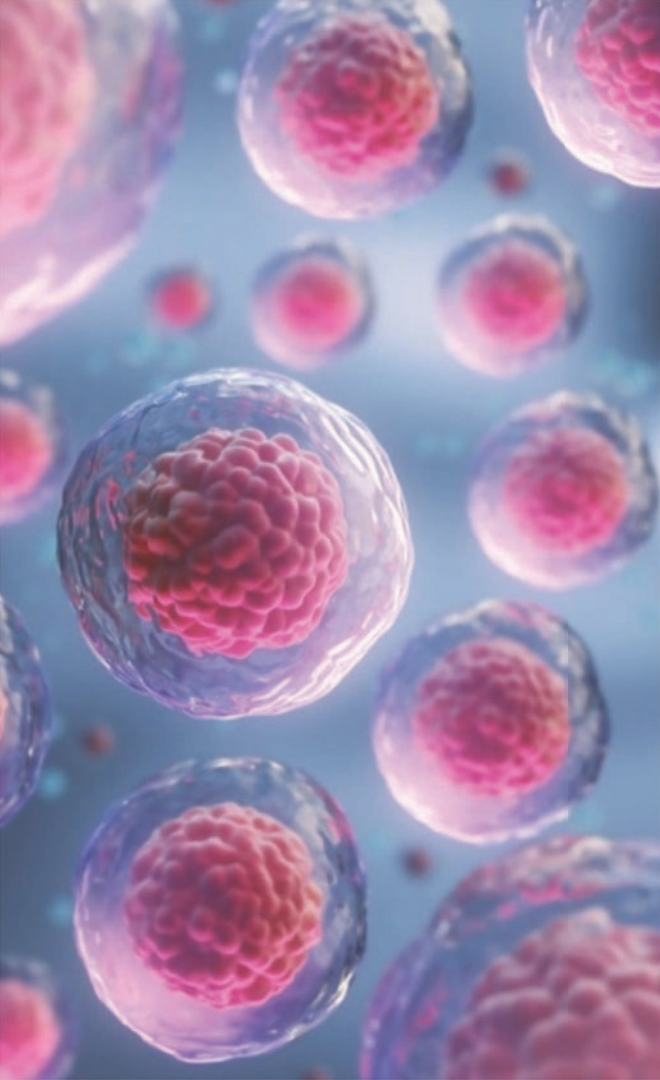


Aging is the biggest risk factor for developing diseases.

The incidence of every disease gets greater as you grow older.



X:41 Y:31  
100%



Senescence: the many processes by which cells lose function.

For something to truly be anti aging, it must slow, stop or reverse senescence.

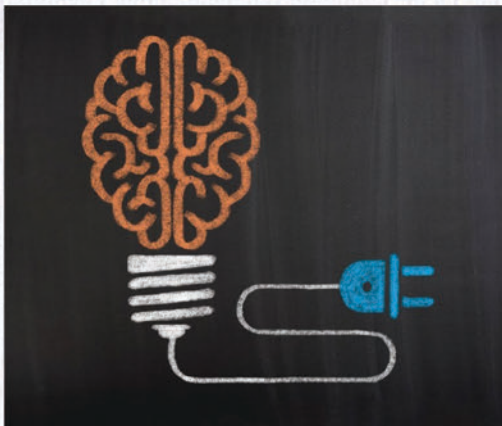
Regenerative medicine

Rejuvenative medicine

- Regenerate means replace.
- Rejuvenate means make younger, more vital and lively.







---

Genomic Testing



---

Peptides



---

Exercise and Supplements



---

Customized Diet



---

Exosomes



---

Stem Cells

James Mellon, author of Juvenescence, Investor and Biotech pundit. In The Economist, in 2018 said,

“the anti-aging market is worth US \$150 billion globally today. Imagine how much it would be worth if the products actually worked?”





| Compound (chemical class)  | Sources   | Medication/supplement name(s)  | Effects on organism   | Clinical trial phase  | Targets   | Side effects  |
|----------------------------|---|--|---|---|---|---|
| Aspirin                    | Meadow sweet<br>Willow bark<br>Blueberry Broccoli<br>Cauliflower Eggplant<br>Kiwi Grapes    | Ecotrin Aspirin 81 Aspirin<br>low Aspirin low strength   | Anti-inflammation Anti-cancer<br>Anti-stress  | Pain reliever/fever reducer (FDA-approved) T2D (phase 3/4) Heart disease (phase 3/4) Atherosclerosis (phase 4) Cancers (phases 1/2/3/4) Obesity (phase 1) | COX-1, COX-2, PTGS2, NF-κB, AMPK  | Diarrhea Headache<br>Loss of appetite<br>Vomiting Weight gain                                 |
| Curcumin (polyphenol)      | Curry spice Ginger<br>Turmeric  | Theracurmin Meriva<br>Longvida BCM-95  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Anti-stress                  | GRAS by FDA AD (phase 2) Cancer (phase 2)   | NF-κB, COX-1, COX-2, TNF-α, p53, PPARγ, TR, Nrf2, FAK, Src, GSK3, AP1, TOR, LOX, AMPK         | Flatulence Nausea<br>Diarrhea   |
| Epigallocatechin gallate   | Green tea Apples<br>Blackberry Carob flour  | Green tea extract  | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Anti-obesity Anti-diabetic<br>Neuro-protective Anti-stress        | GRAS by FDA AD (phase 2/3)  | Bcl2, NOS2, LamR, EGFR, Telomerase, Topoisomerase II, DNMT1                                   | Headache<br>Nervousness<br>Vomiting Diarrhea<br>Irritability Irregular heartbeat<br>Dizziness |
| Fisetin (flavonoid)        | Acacias parrot tree<br>Honey locust onion<br>Strawberry Apple<br>Grapes                     | Fisetin  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Anti-diabetic Anti-oxidant CR mimetic<br>Anti-stress              | Preclinical studies   | Akt, Cdk6, mTOR, PI3 K, ERK   | Not reported  |
| Melatonin (biogenic amine) | Tomato Cereal<br>Walnut Olive oil<br>Strawberry Milk Wine<br>Beer                           | Melatonin Circadin<br>Clocktonin   | Neuro-protective Anti-stress<br>Anti-migraine Sedation Sleep quality<br>Anti-depressive Anti-stress                                 | GRAS by FDA Cancers (phases 1/2/3/4) Glucose tolerance (phase 3) Insomnia (phase 2) T2D (phase 2) Alzheimer's disease (phase 2)                           | MT1, MT2, MT3, GPR50  | Headache<br>Depression<br>Sleepiness<br>Dizziness<br>Irritability                             |
| Metformin (biguanide)      | Chemically synthesized  | Act Metformin Bio-metformin Fortamet<br>Glucophage Glumetza<br>Metformin Riomet                | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-diabetic<br>Anti-depressant Neuro-protective<br>Cardio-protective CR mimetic | T2D (phase 4) Obesity (phase 4) Impaired glucose tolerance (phase 4)  | AMPK  | Lactic acidosis<br>Diarrhea Nausea<br>Vomiting Flatulence                                     |
| Quercetin (flavonoid)      | Greens Berries<br>Tomato Broccoli<br>Onions Tea leaves                                      | Quercetin  | Anti-atherogenic Anti-inflammation<br>Cardio-protective Anti-oxidant  | GRAS by FDA T2D (phase 1) CVD (phase 1)   | SIRT1, PLA2, PI3K, pp60src Phosphotransferase, Protein kinases, Cyclic GMP phosphodiesterases | Not reported  |
| Resveratrol (polyphenol)   | Grapes Wine<br>Rasperry Plums Acai<br>Peanuts   | Resveratrol  | Anti-inflammation Anti-cancer<br>Anti-atherogenic Anti-obesity<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | GRAS by FDA AD (phase 3) Cognitive impairment (phase 4)   | Sirt2, p53 AMPK, PGC1-α   | Intestinal upset<br>Nausea  |
| Rapamycin                  | <i>Streptomyces hygroscopicus</i>   | Rapamycin Sirolimus<br>Rapamun   | Anti-inflammation Anti-cancer<br>Anti-amiloid Anti-atherogenic<br>Neuro-protective Cardio-protective<br>CR mimetic Anti-stress      | CVD (phase 3) Tubercous sclerosis (phase 3) Cancers (phases 1/2/3/4)  | mTOR  | Suppression of immune system<br>Hepatotoxicity  |
| Statins                    | Oyster Mushrooms<br>Red yeast rice Soy products<br>Grains Cauliflower Onion<br>Apple Orange | Atorvastatin Fluvastatin<br>Lovastatin Pitavastatin<br>Pravastatin Rosuvastatin<br>Simvastatin | Anti-hyperlipidemic Cardio-protective<br>Anti-diabetic Anti-atherogenic<br>Anti-inflammation Anti-Alzheimer's                       | Hypercholesterolemia (FDA-approved) CVD (phase 4) Myocardial infarction (phase 4) Sexual dysfunction (phase 4) T2D (phase 4) Schizophrenia (phase 4)      | Hydroxy-methylglutaryl-CoA reductase  | Headache<br>Depression<br>Sleepiness<br>Dizziness Diarrhea<br>Memory loss<br>Diabetes         |

## FOREVER YOUNG

- Do the foundational work, learn how to customize your diet and exercise.
- Monitor and optimize your sleep.
- Identify and address risk factors through conventional medical testing including targeted genomic studies.
- Test for and correct nutritional deficiencies.
- Take the natural agents Fisetin, Nicotinamide riboside, *trans*-Resveratrol, Cat's claw daily and indefinitely.
- Metformin; anti-aging benefits
- Combination of DHEA, Metformin and hGH
- Stem cells, waiting to see
- Autologous exosomes





# Regenerative Medicine: Buying Time