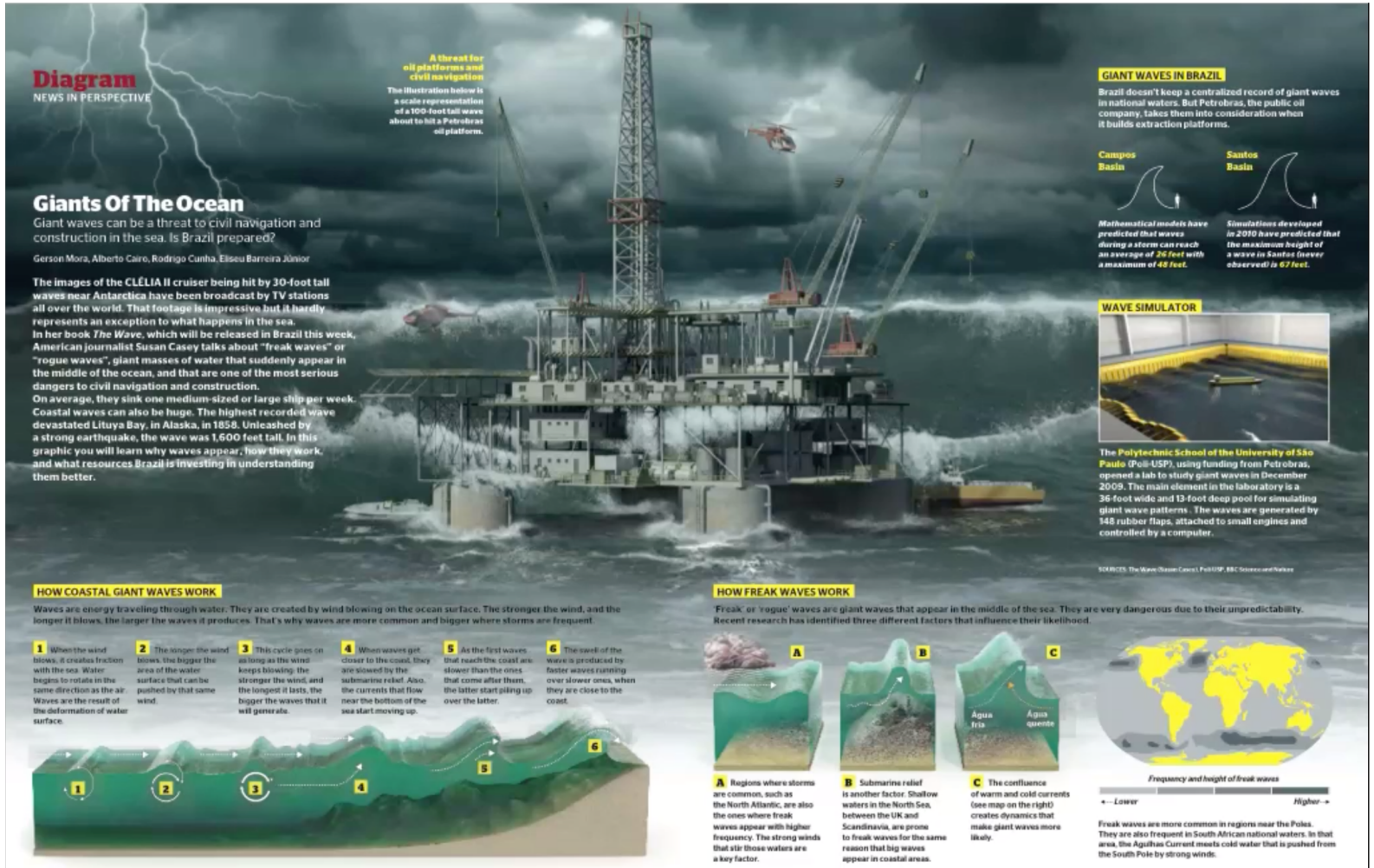
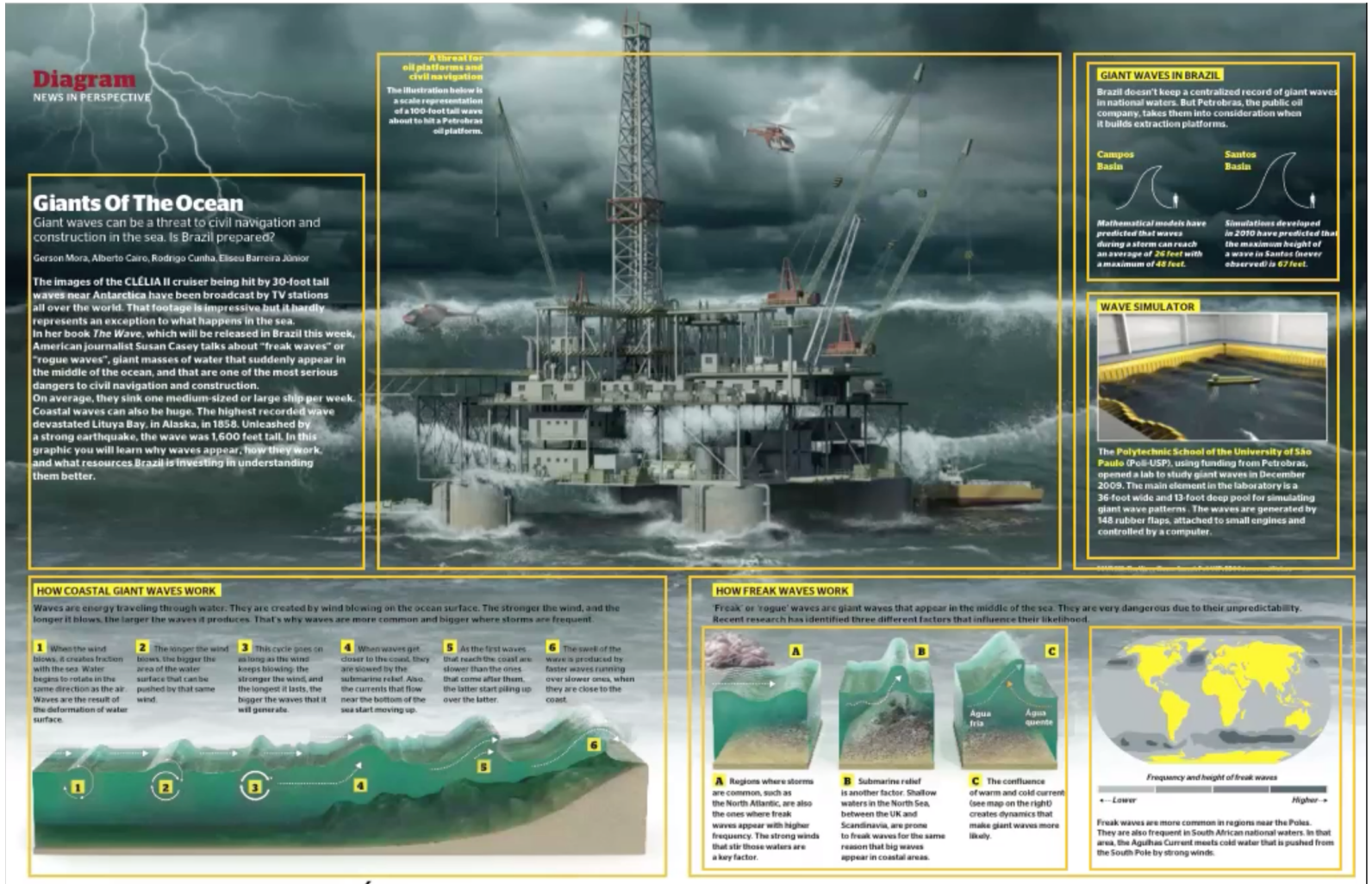
Grids: see compositions as rectangles



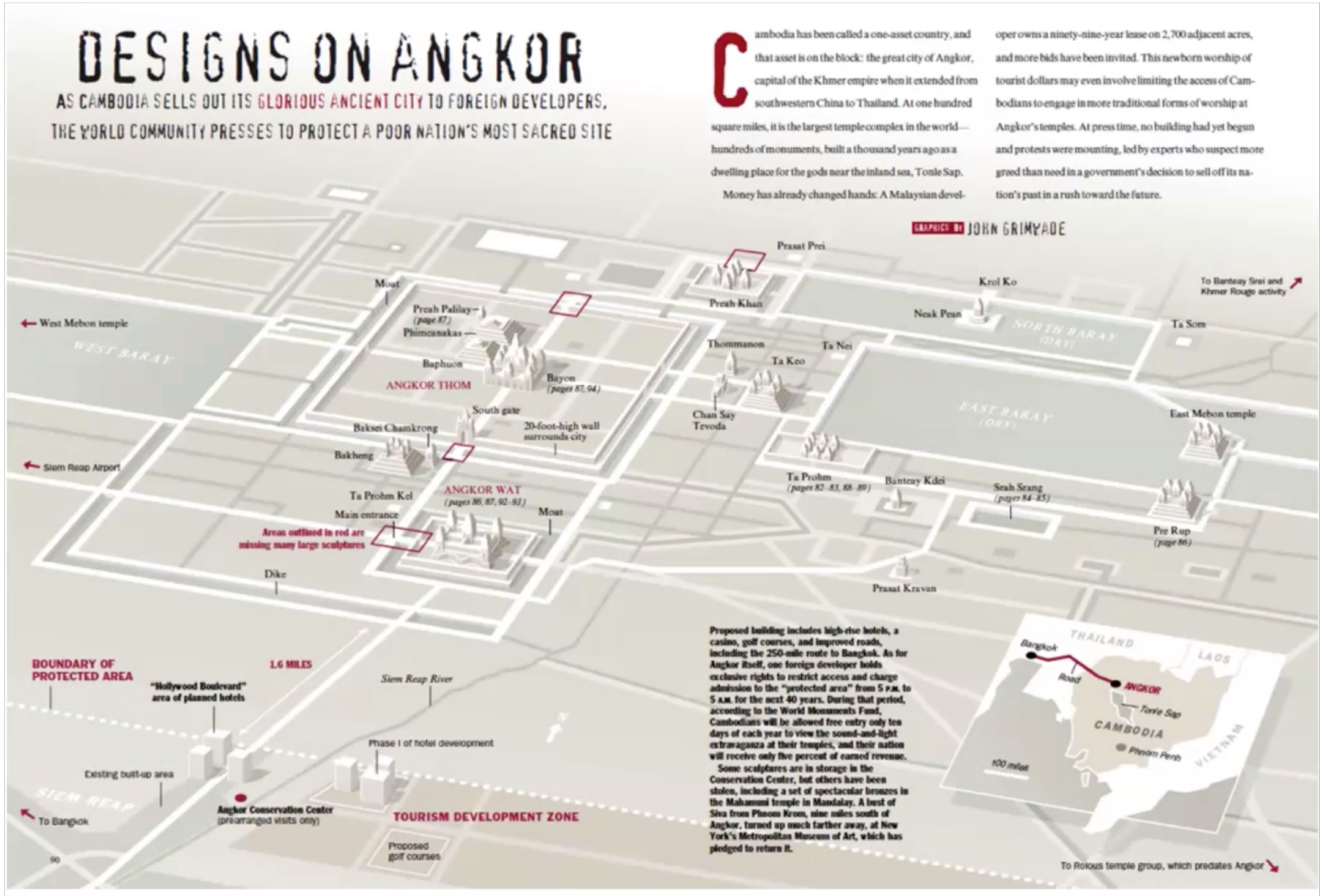
Época magazine (Editora Globo, Brazil)

Grids: see compositions as rectangles



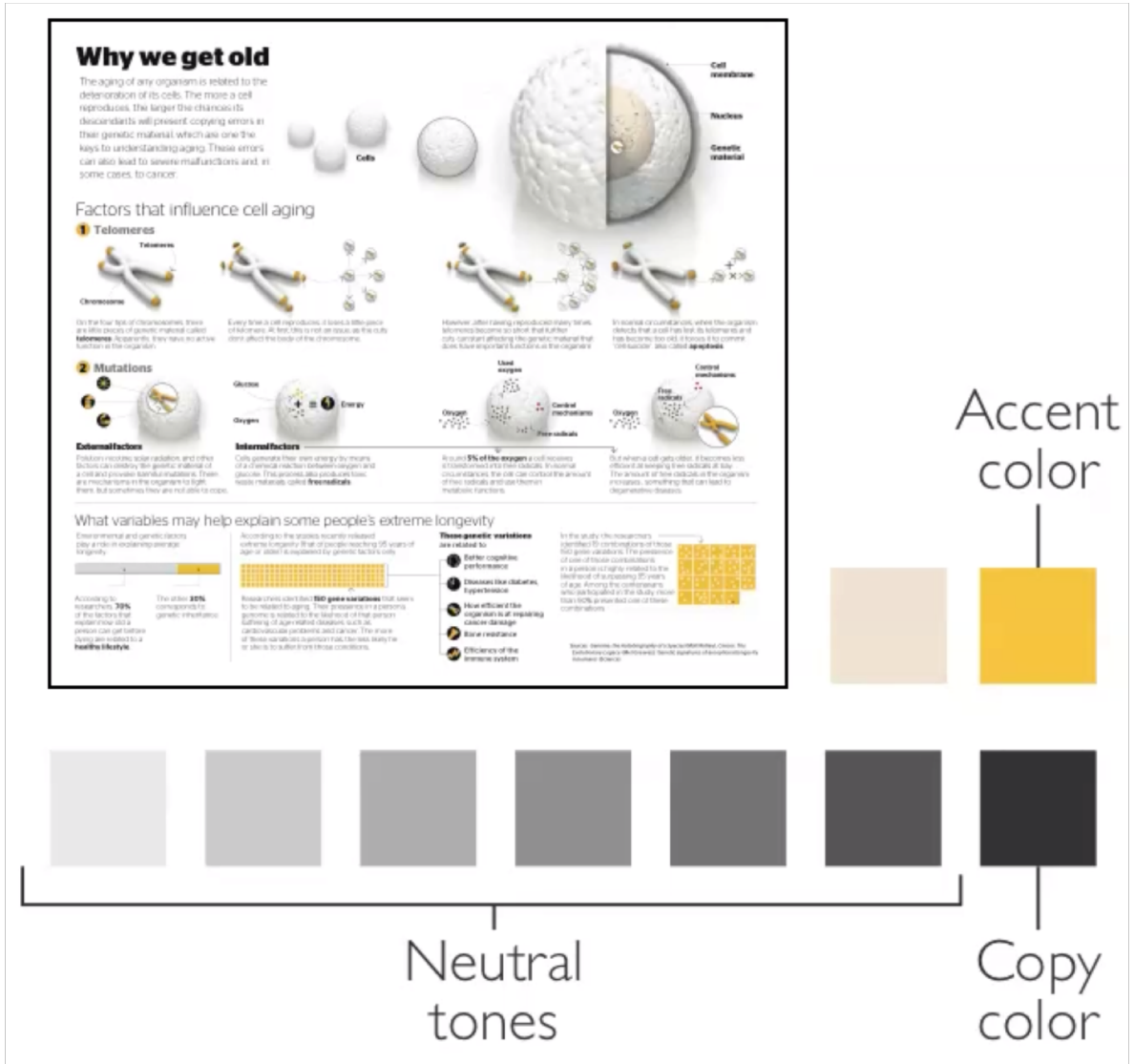
Época magazine (Editora Globo, Brazil)

Color: restrained color palette and contrast

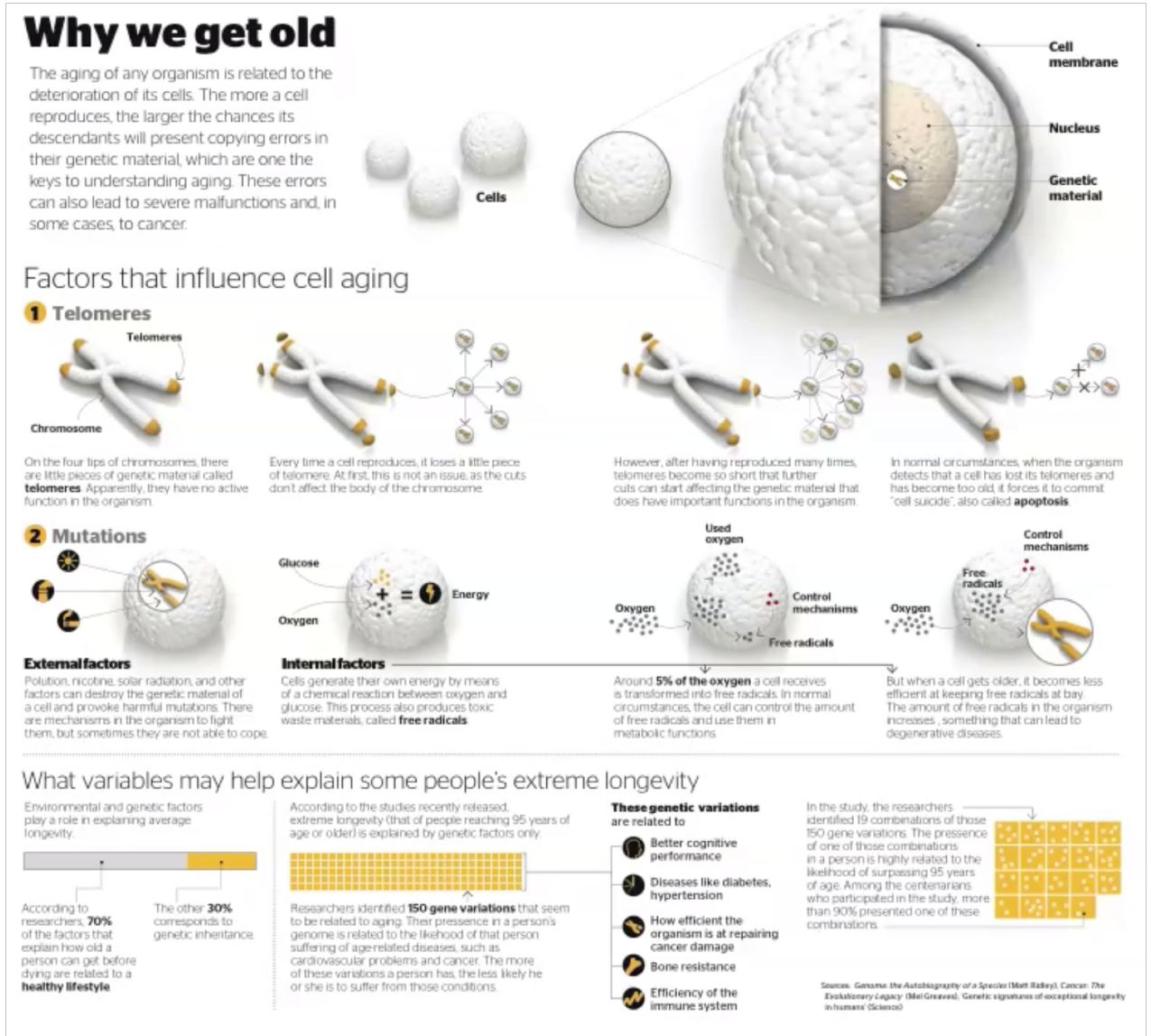


John Grimwade - Condé Nast Traveler

Color: restrained color palette and contrast

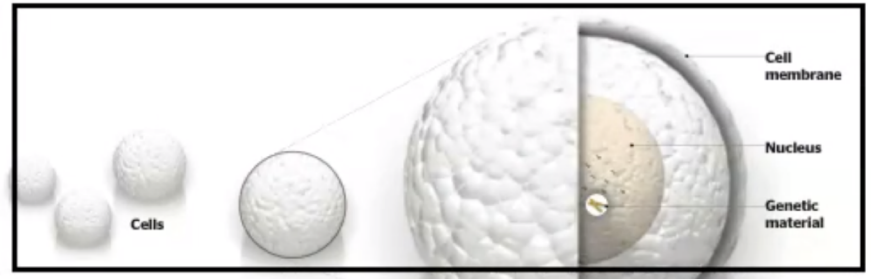


Types: Consistency, and following hierarchy



Why we get old

The aging of any organism is related to the deterioration of its cells. The more a cell reproduces, the larger the chances its descendants will present copying errors in their genetic material, which are one the keys to understanding aging. These errors can also lead to severe malfunctions and, in some cases, to cancer.



Factors that influence cell aging

1 Telomeres

On the four tips of chromosomes, there are little pieces of genetic material called **telomeres**. Apparently, they have no active function in the organism.

Every time a cell reproduces, it loses a little piece of telomere. At first, this is not an issue, as the cuts don't affect the body of the chromosome.

However, after having reproduced many times, telomeres become so short that further cuts can start affecting the genetic material that does have important functions in the organism.

In normal circumstances, when the organism detects that a cell has lost its telomeres and has become too old, it forces it to commit "cell suicide", also called **apoptosis**.

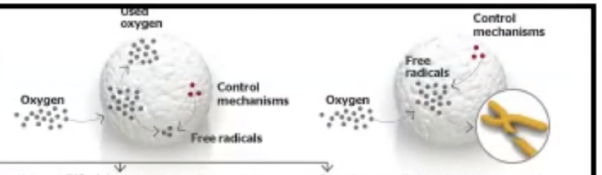
2 Mutations

External factors

Pollution, nicotine, solar radiation, and other factors can destroy the genetic material of a cell and provoke harmful mutations. There are mechanisms in the organism to fight them, but sometimes they are not able to cope.

Internal factors

Cells generate their own energy by means of a chemical reaction between oxygen and glucose. This process also produces toxic waste materials, called **free radicals**.



Around **5% of the oxygen** a cell receives is transformed into free radicals. In normal circumstances, the cell can control the amount of free radicals and use them in metabolic functions.

But when a cell gets older, it becomes less efficient at keeping free radicals at bay. The amount of free radicals in the organism increases , something that can lead to degenerative diseases.

What variables may help explain some people's extreme longevity

Environmental and genetic factors play a role in explaining average longevity.

According to researchers, **70%** of the factors that explain how old a person can get before dying are related to a **healthy lifestyle**.

The other **30%** corresponds to genetic inheritance.

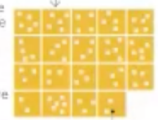
According to the studies recently released, extreme longevity (that of people reaching 95 years of age or older) is explained by genetic factors only.

Researchers identified **150 gene variations** that seem to be related to aging. Their presence in a person's genome is related to the likehood of that person suffering of age-related diseases, such as cardiovascular problems and cancer. The more of these variations a person has, the less likely he or she is to suffer from those conditions.

These genetic variations are related to

- Better cognitive performance
- Diseases like diabetes, hypertension
- How efficient the organism is at repairing cancer damage
- Bone resistance
- Efficiency of the immune system

In the study, the researchers identified 19 combinations of those 150 gene variations. The presence of one of those combinations in a person is highly related to the likelihood of surpassing 95 years of age. Among the centenarians who participated in the study, more than 90% presented one of these combinations.



Sources: *Genome: the Autobiography of a Species* (Matt Ridley), *Cancer: The Evolutionary Legacy* (Mel Greaves), 'Genetic signatures of exceptional longevity in humans' (Science)

Strategy – simple heuristics

- Grids
- Color
- Type

By these you can accentuate *Unity, Variety* and *Hierarchy*

Design critique - example

http://nyti.ms/1OUa2g

Who is the intended audience?

What tasks does the visualization enable?

What data is represented in this visualization? Be specific.

How is each data type visually encoded?

How do the visual elements and user interactions support the tasks?

Why do you like / dislike this visualization?

Summary

- Preattentive features
- Charts and functions
- Principles of graphic design
  - Unity
  - Variety
  - Hierarchy
- Strategy
  - Grids
  - Color
  - Type