

# HASD - Human Aging System Diagram

The Project "Human Aging System Diagram" (HASD) developed by the *Research Center of Advanced Technologies* (Moscow, Russia) is designed to develop a high-quality scientific model of human aging, represented in a visual form.

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We suggest that the final result of our activities will be the diagram comprising the following system information verified by the world leading experts:

- basic age-specific processes at various organization levels,
- cause-and-effect relations between processes,
- qualitative transfers in cascade processes.

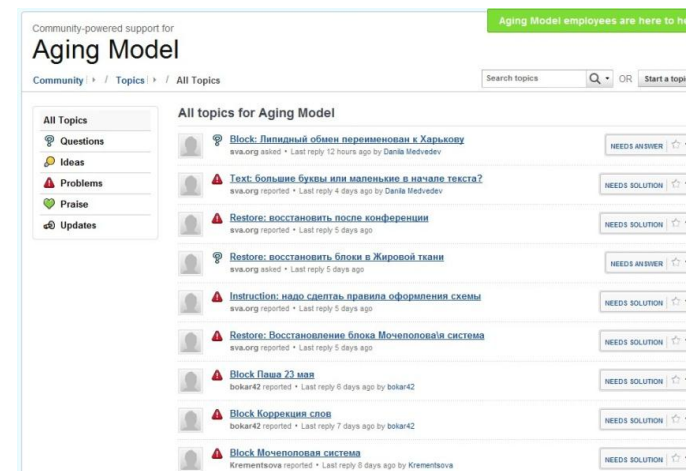
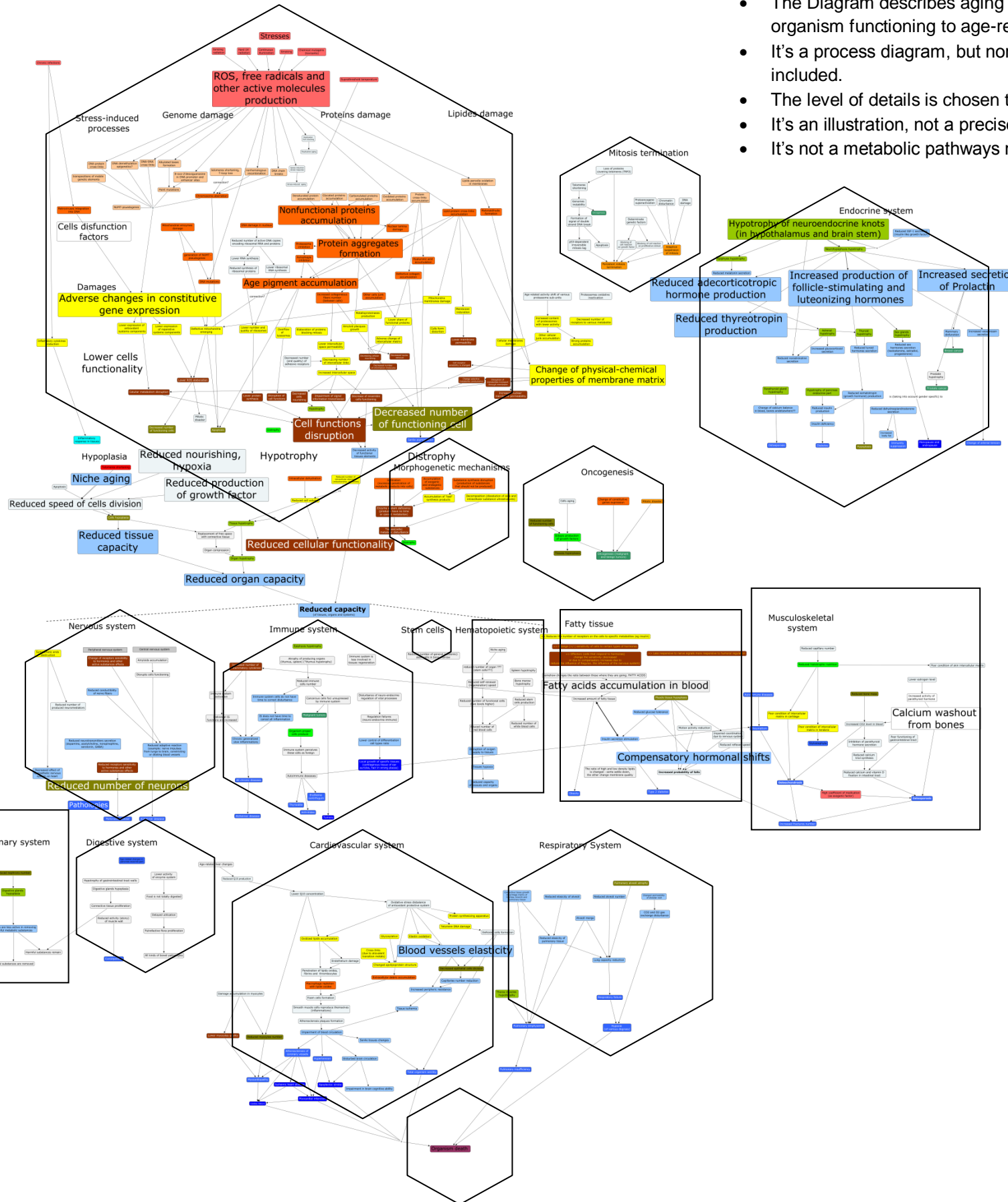
The HASD project is characterized by a unique methodological approach developed in our Center. The HASD methodology is developed along two lines: scientific principles of the Diagram design and visualization methods.

Moreover, in the future we are planning to expand on all the Diagram blocks, to work out a developing computer diagram and later a model.

Other diagrams can supplement this one, we don't aim to do everything

## Scientific Principles

- Human, not animal aging.
- The Diagram describes aging from prime causes (top) through disturbances in normal organism functioning to age-related pathologies and death (bottom).
- It's a process diagram, but normal (non-aging) processes, such as digestion are not included.
- The level of details is chosen to best describe aging.
- It's an illustration, not a precise model (no numbers).
- It's not a metabolic pathways map.



## Online collaboration — Get Satisfaction.

We are using GetSatisfaction, an online issue-tracking system, to keep track of ideas, questions and problems that are constantly being pointed out.

You can leave your comments and criticisms at

[http://getsatisfaction.com/aging\\_model](http://getsatisfaction.com/aging_model)

Members of the project team actively monitor all comments and suggestions there.

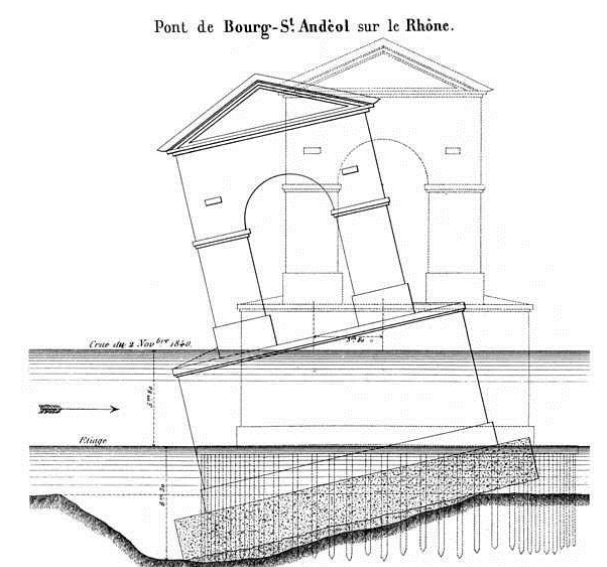
If you are not satisfied with anything on the Human Aging System Diagram, get satisfaction.

## Visualisation

Charles Joseph Minard was a famous French engineer and an information visualization pioneer.

In 1840 he was asked to investigate the cause of the collapse of the bridge at Bourg St. Andeol on the Rhone. His report consisted of this drawing, to which words provide little extra by way of explanation.

Why did the bridge collapse? As shown, the bed beneath the left side of the bridge had washed away.



Today, gerontology has accumulated extensive knowledge and data bases on aging processes; however, this information is not consolidated in a logical, easily observed, improving and constantly verified form. The diagram, especially developed by many experts from all over the world, will make it possible to consolidate all knowledge on aging.

But the current version neither represents the scientific consensus, nor the diversity of opinions on ageing. Many areas do require further detalization. We welcome additions to the diagram, as well as individual researchers' participation in our Project.