THE PROBLEM OF MULTIPLE

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M.Sc. PhD MD Bochkarev IA

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THE PROBLEM OF MULTIPLE

INTRODUCTION

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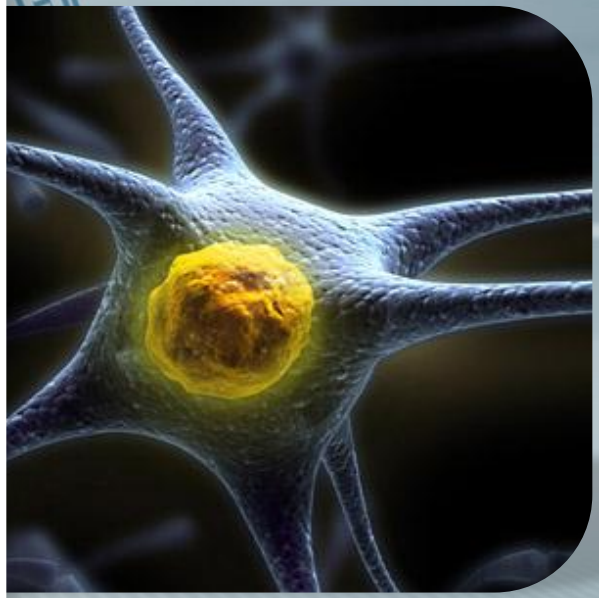
THE PROBLEM OF MULTIPLE

Multiple sclerosis (MS) also known as disseminated sclerosis (DS).



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This nosology was first described in 1868 by French neurologist Jean-Martin Charcot.

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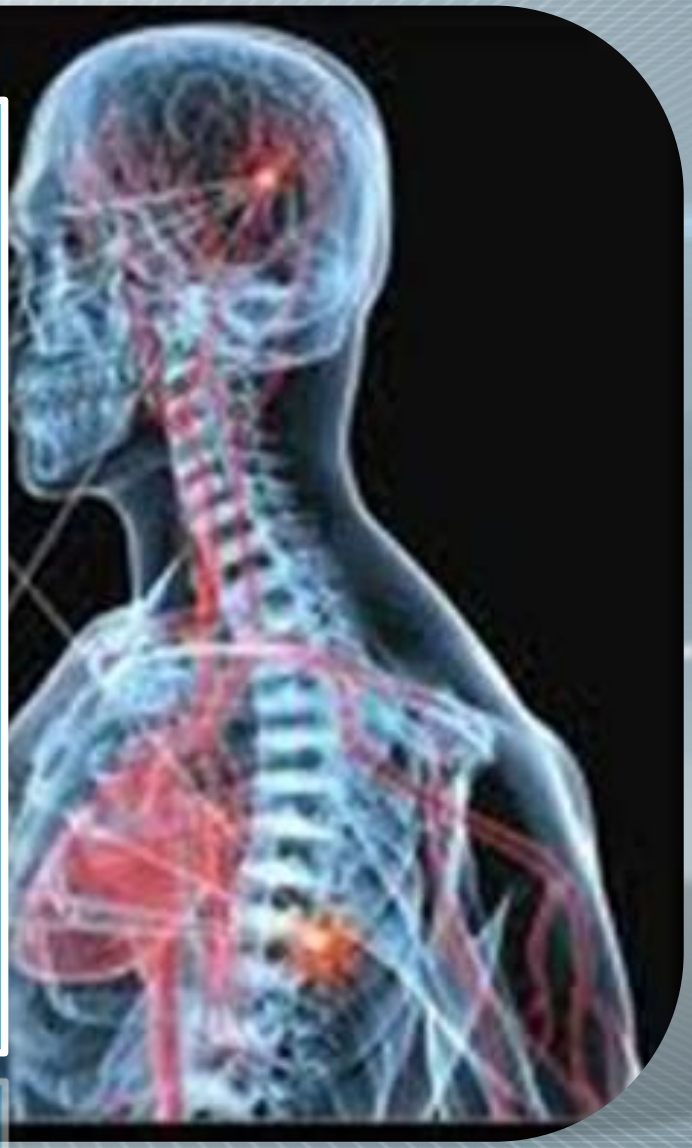
MS is a demyelinating disease of the central nervous system.



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That affects the myelin sheath oligodendrocytes, glial cells covering the axons of the neurons of the brain and spinal cord.

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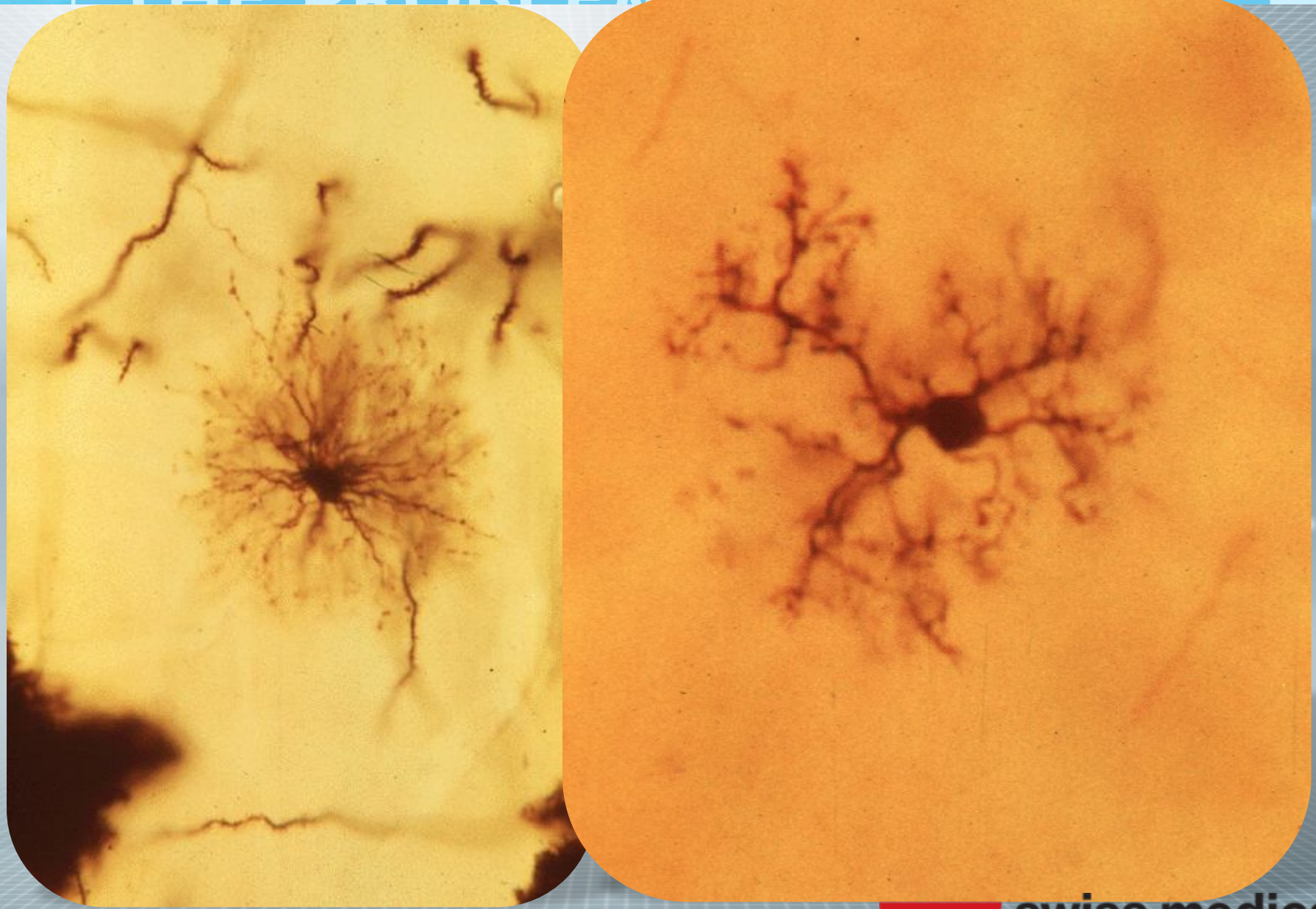

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Violation of axonal conduction results in loss of the ability to communicate the different structures of the central nervous system (CNS).

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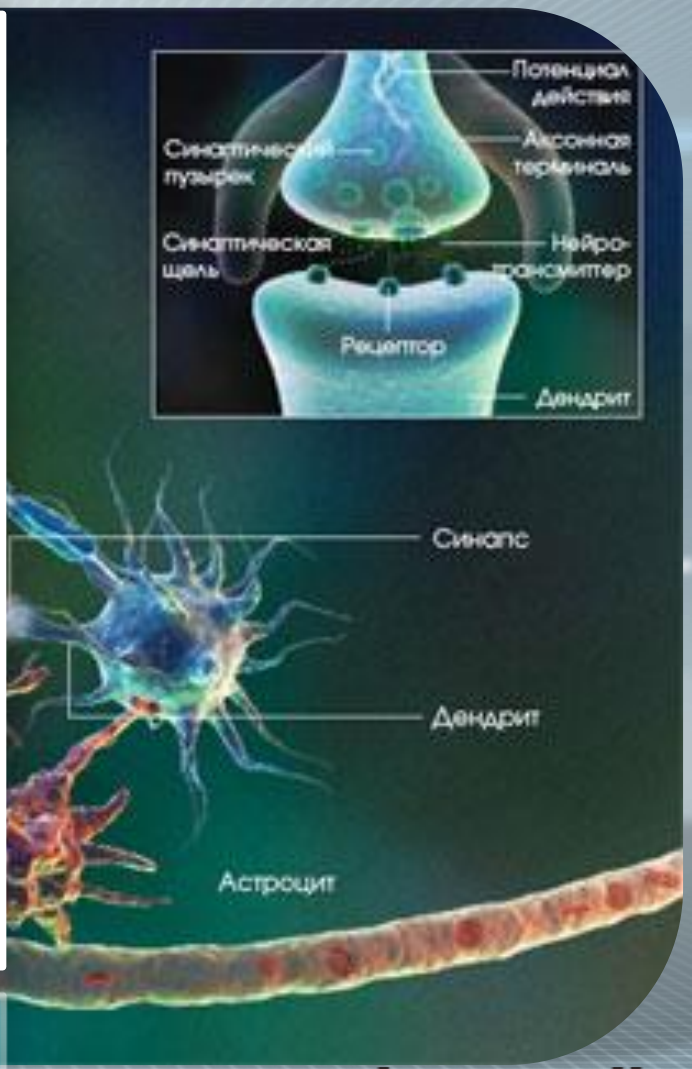
As a result, there are various neurological and psychiatric symptoms and syndromes, the totality of which cause a variety of clinical picture of multiple sclerosis.



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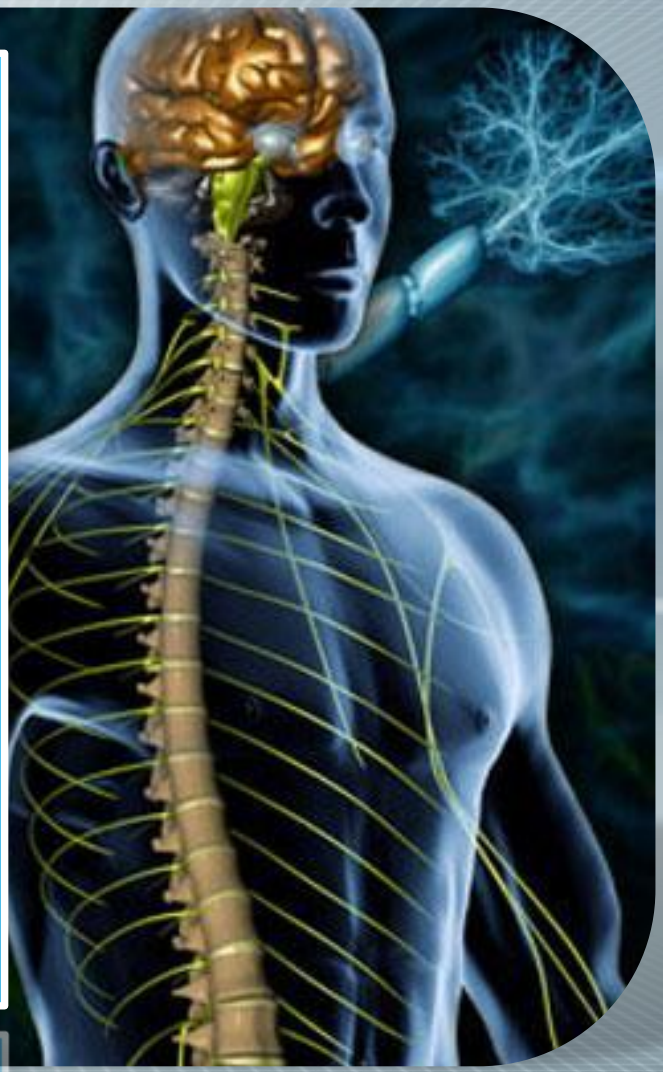
Manifestations of MS can be very diverse from the mental and intellectual disorders to gross motor, and sensory dysfunction.



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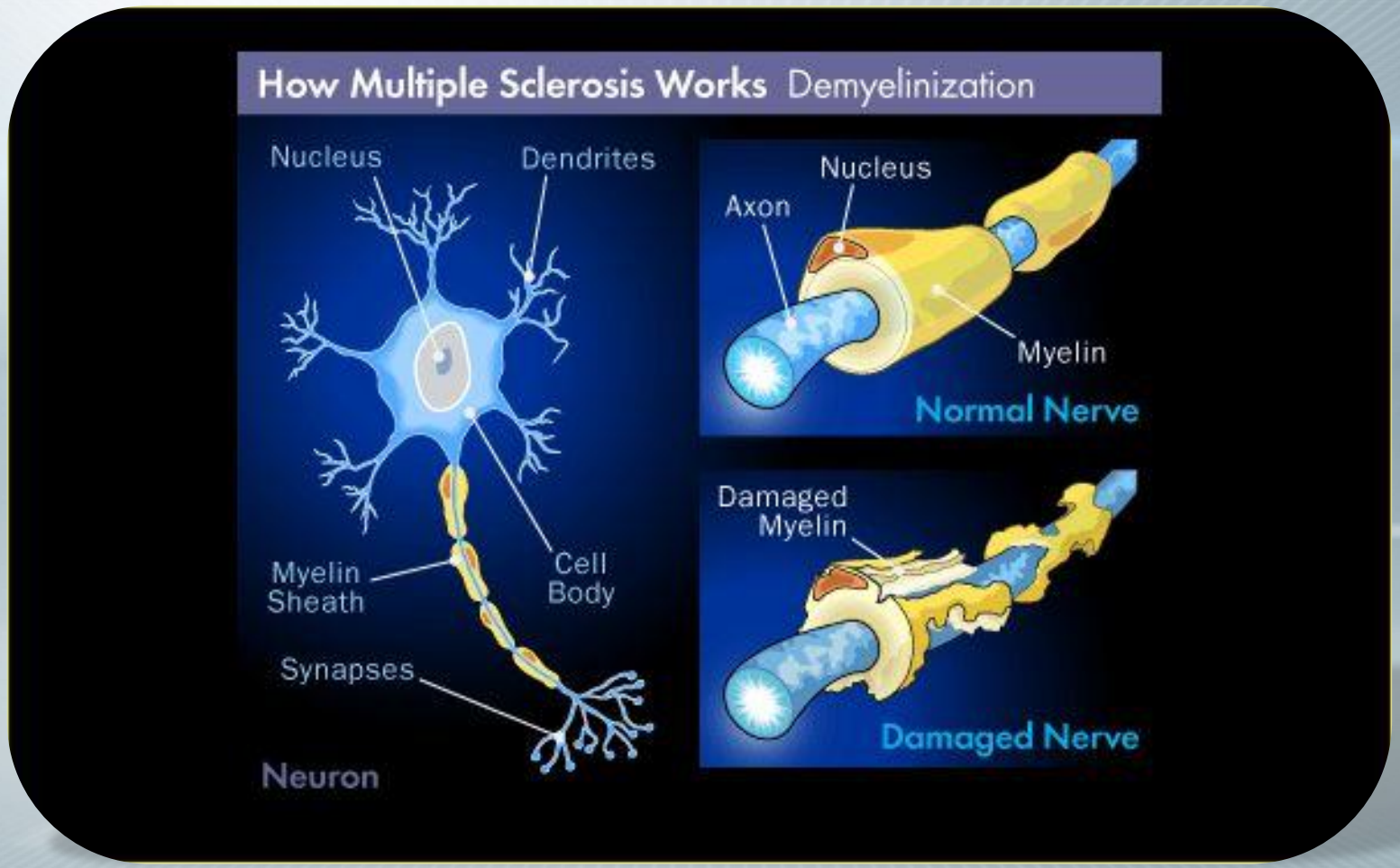

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Forms of MS

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Disseminated sclerosis (DS) has several major clinical forms of the disease, in which the dynamics of symptoms varies.

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The debut of the disease or the emergence, new pathological symptoms, and after that her smooth partial regression characteristic of relapsing forms of MS.

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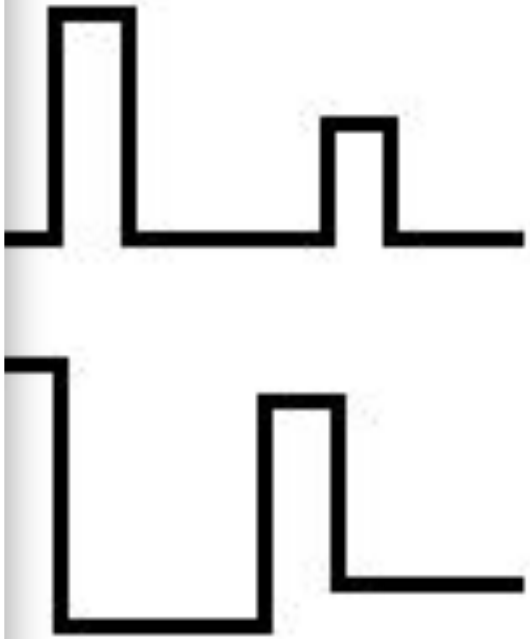
Between attacks, symptoms may disappear completely. However, permanent neurologic deficit is very characteristic of the disease.



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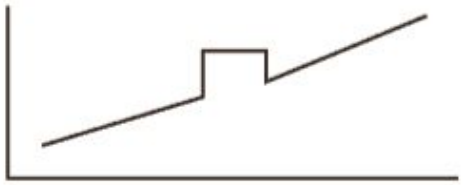
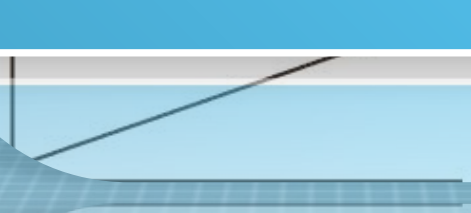
The progression of old symptoms, the growth and the emergence of new, more typical of the progressive forms of MS.

Прогресуючо-рецидивуючий РС





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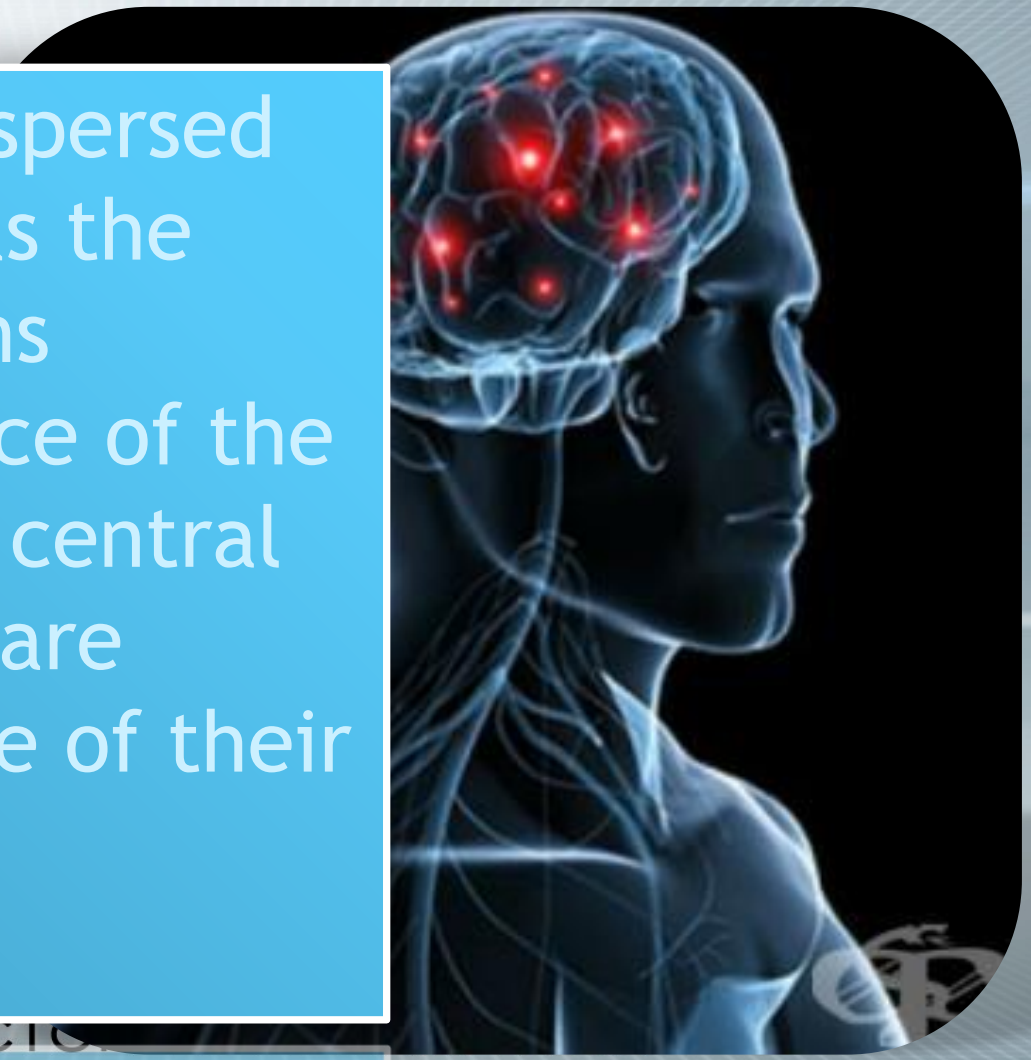
Multiple Sclerosis dispersed in space and time, as the demyelinating lesions scattered in the space of the white matter of the central nervous system and are scattered in the time of their appearance. .



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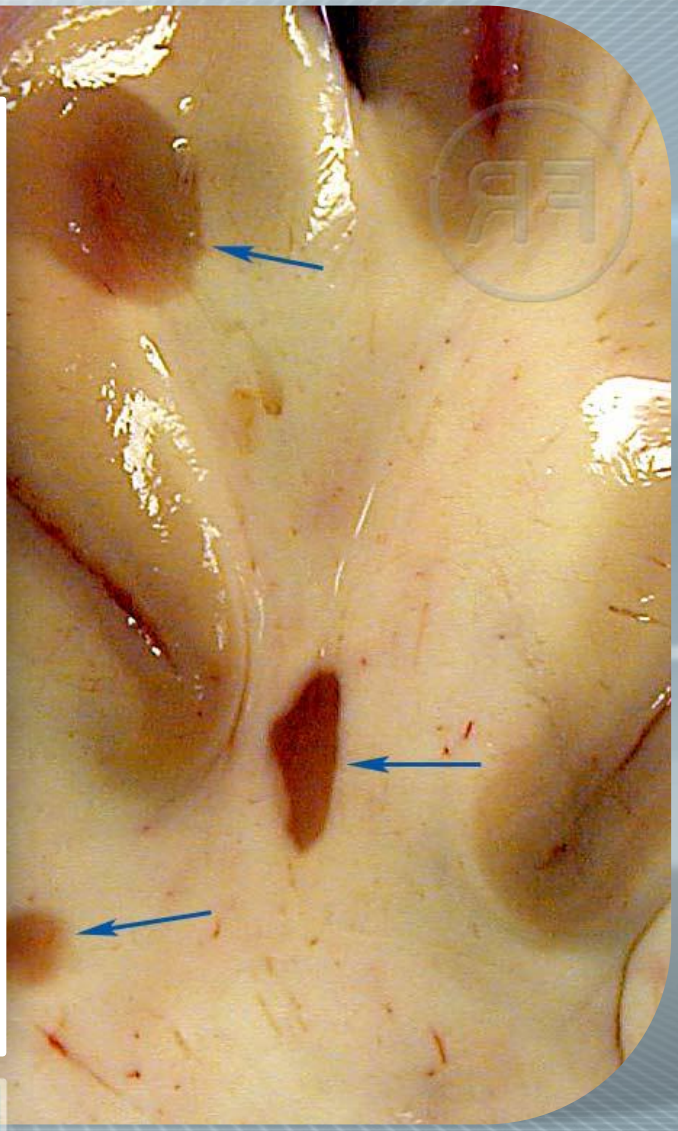
The name "multiple sclerosis" is named because of the identified at postmortem autopsy specific multiple non-specifically localized "scars“.



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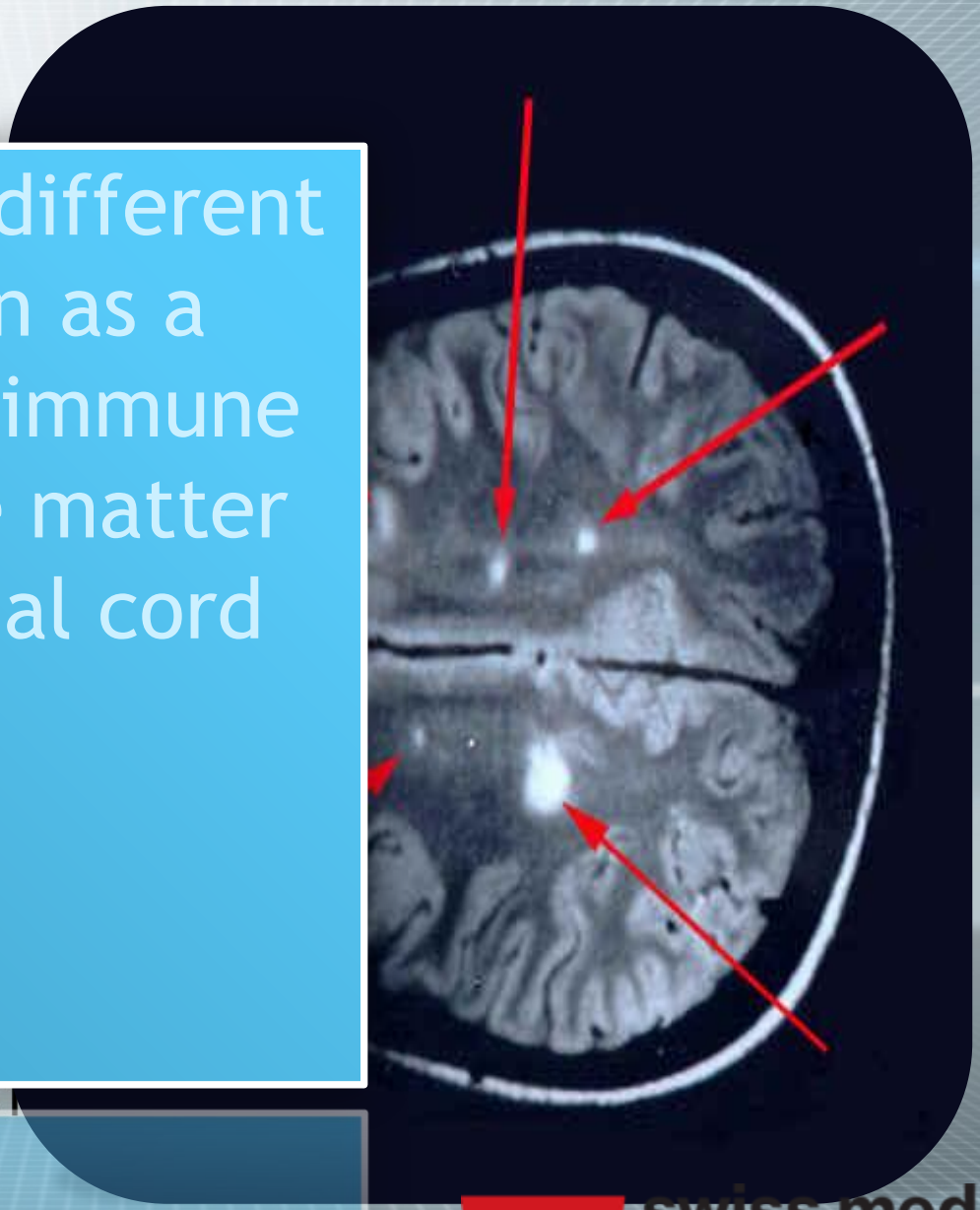
Sclerotic plaques of different sizes that have arisen as a consequence of autoimmune damage to the white matter of the brain and spinal cord



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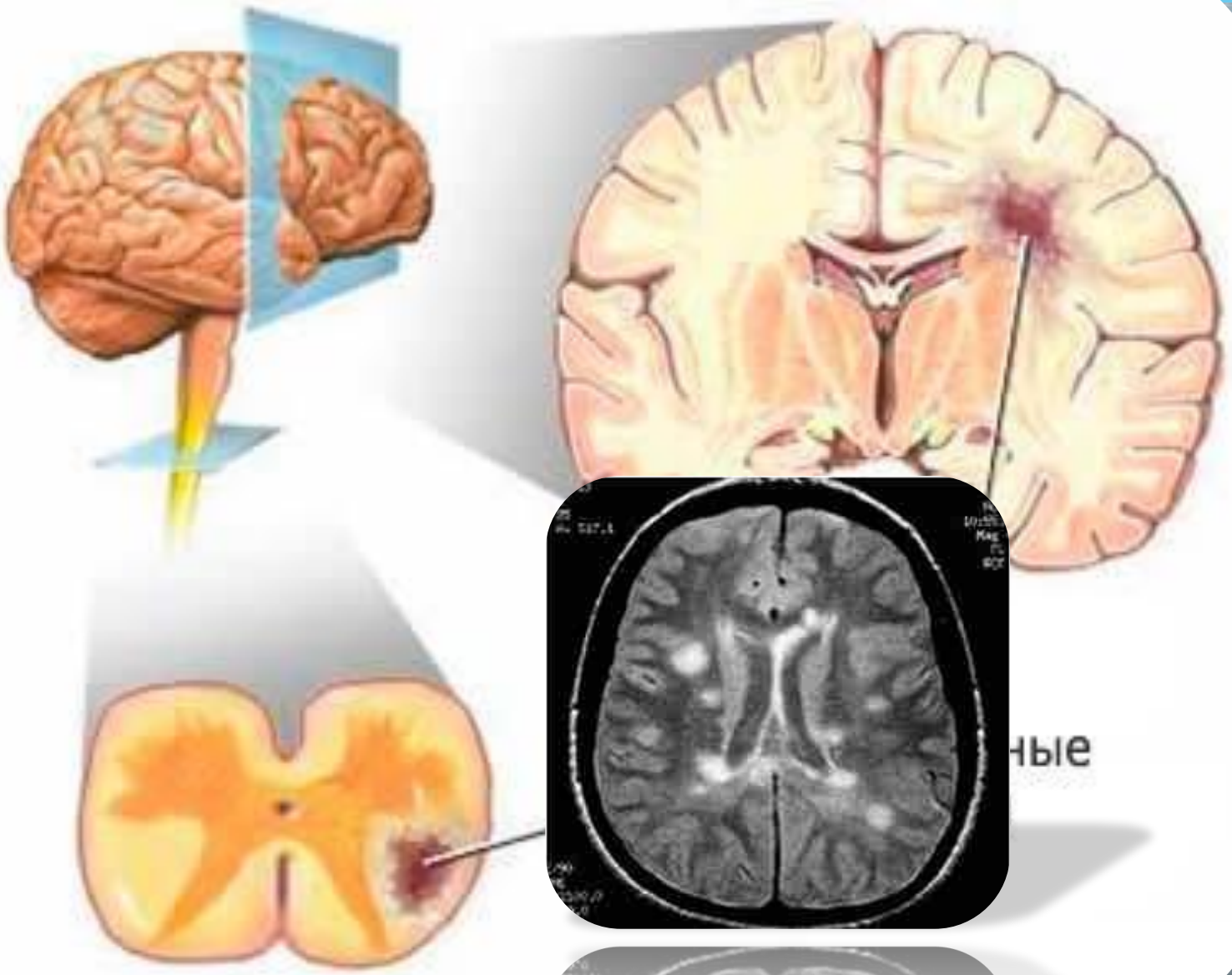

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ETIOLOGY

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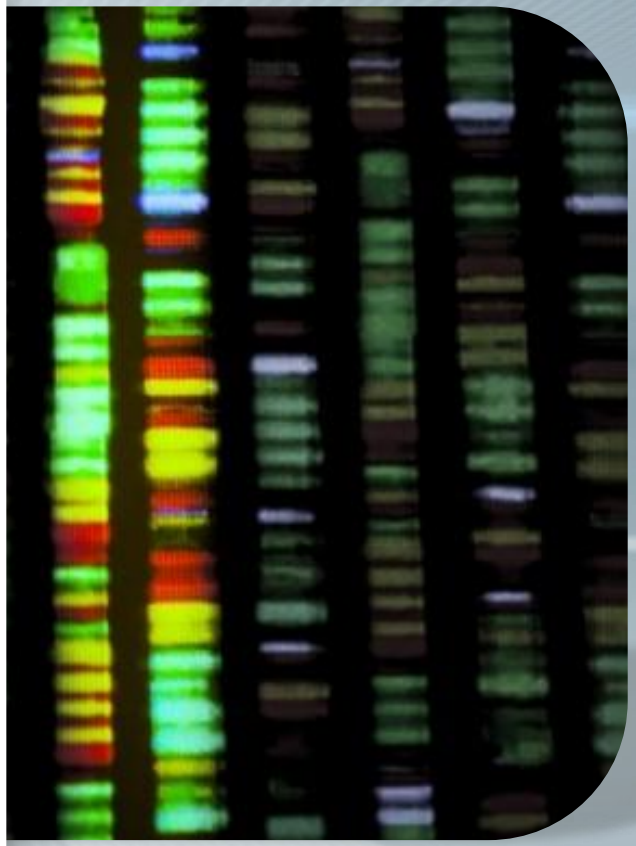
The etiology of MS and the pathological mechanism of demyelination is not completely clear.



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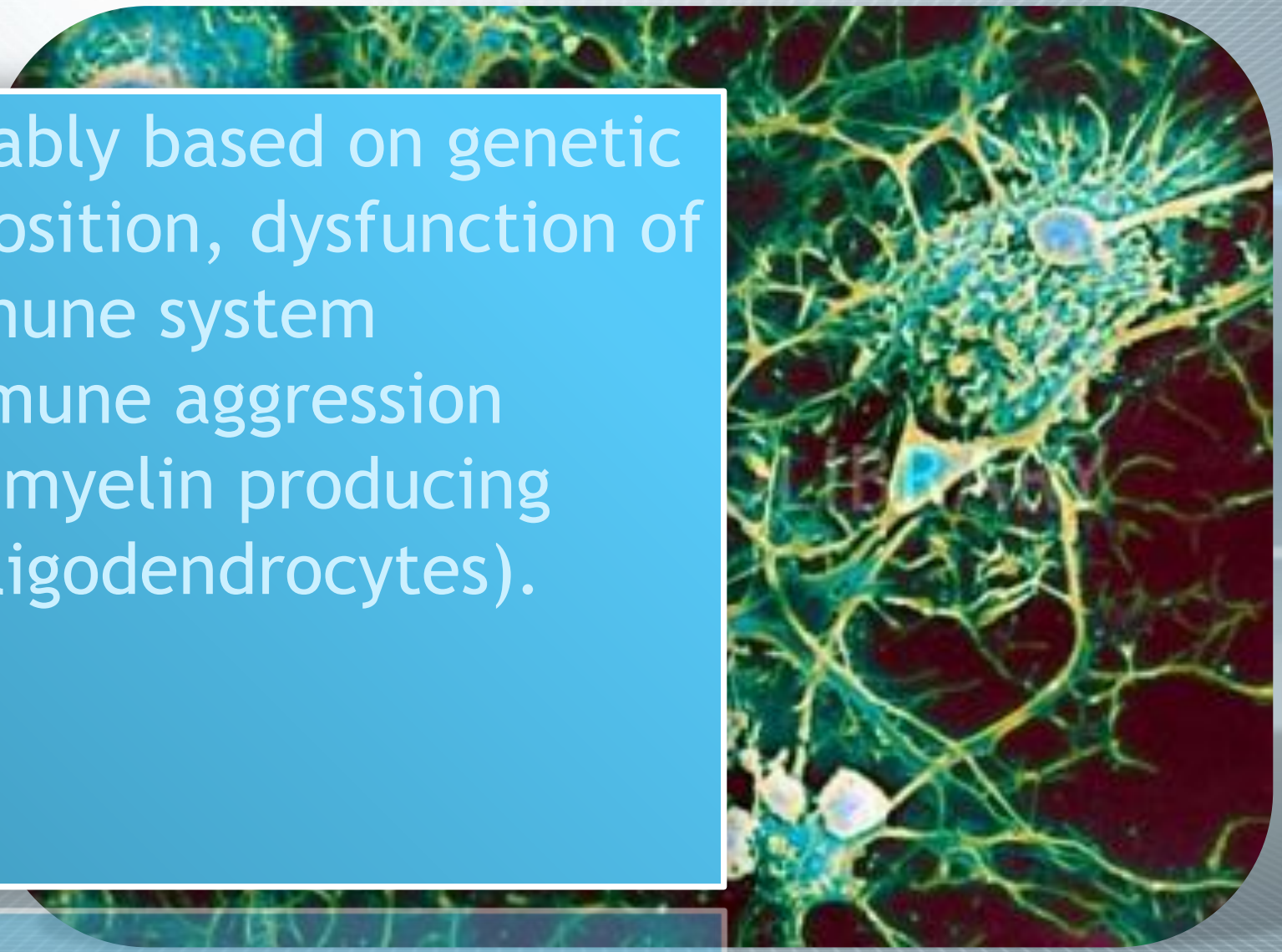
Presumably based on genetic predisposition, dysfunction of the immune system autoimmune aggression against myelin producing cells (oligodendrocytes).



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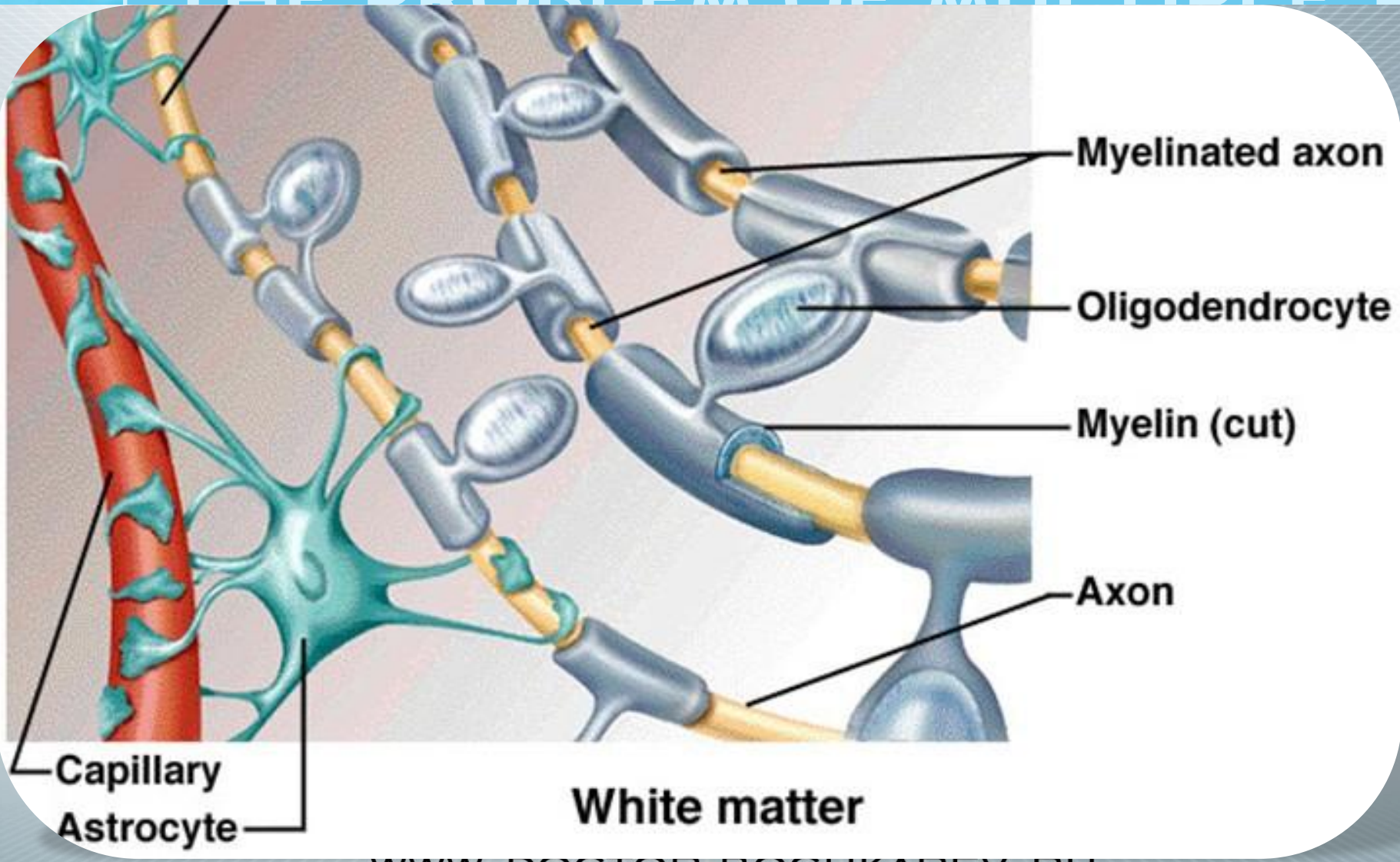

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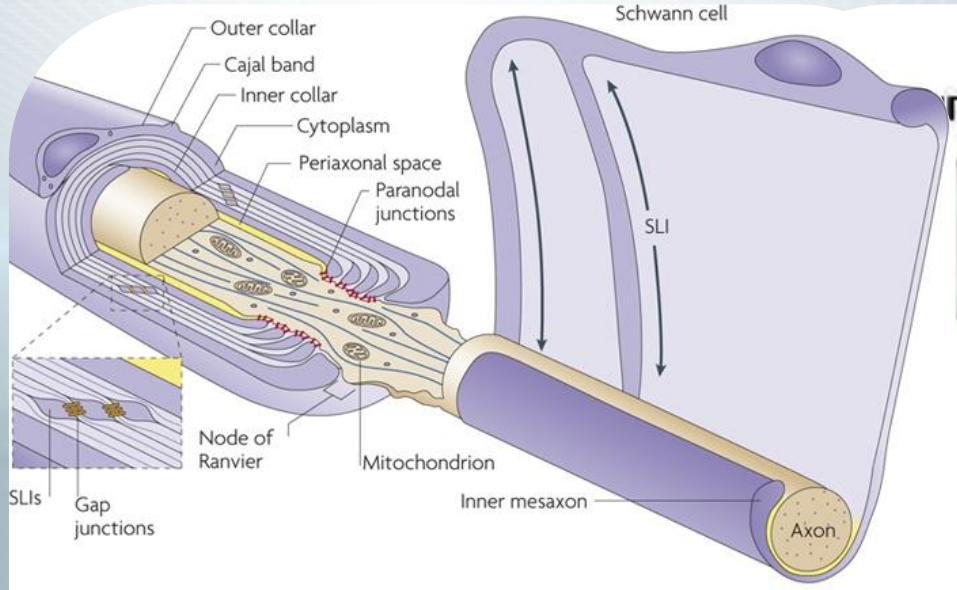

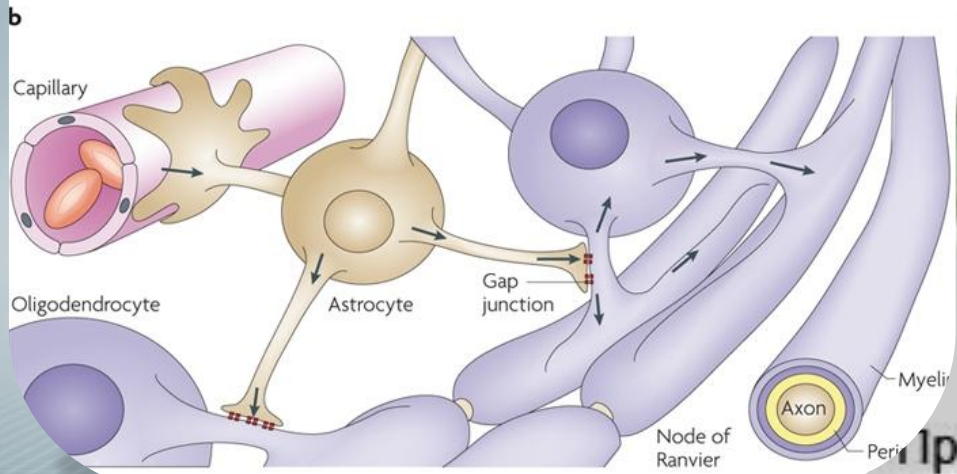

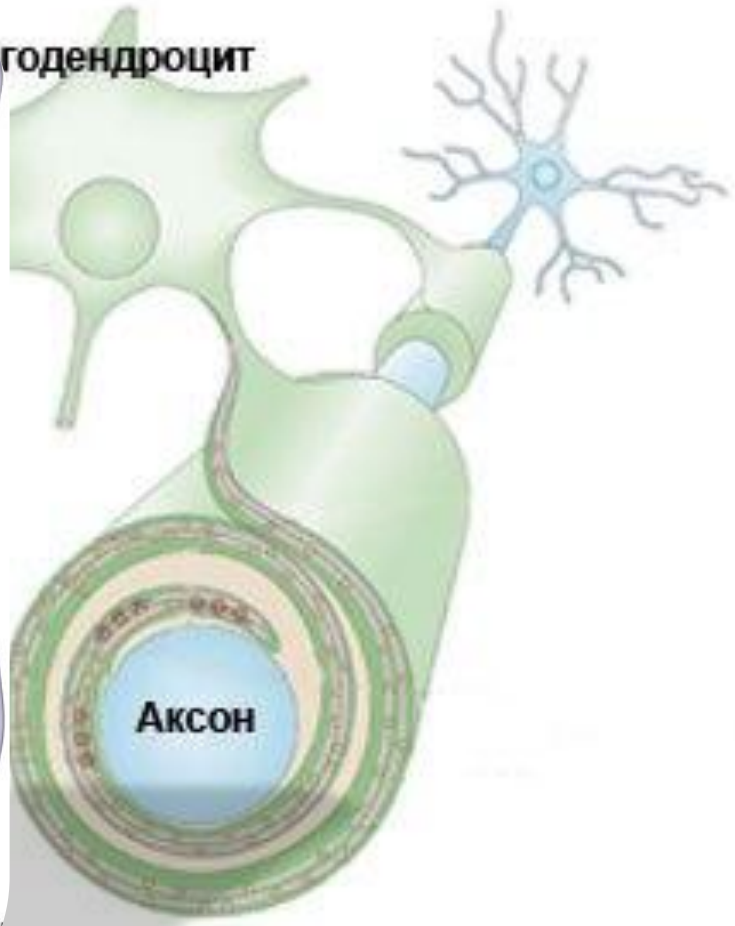

Процесс миелинизации.

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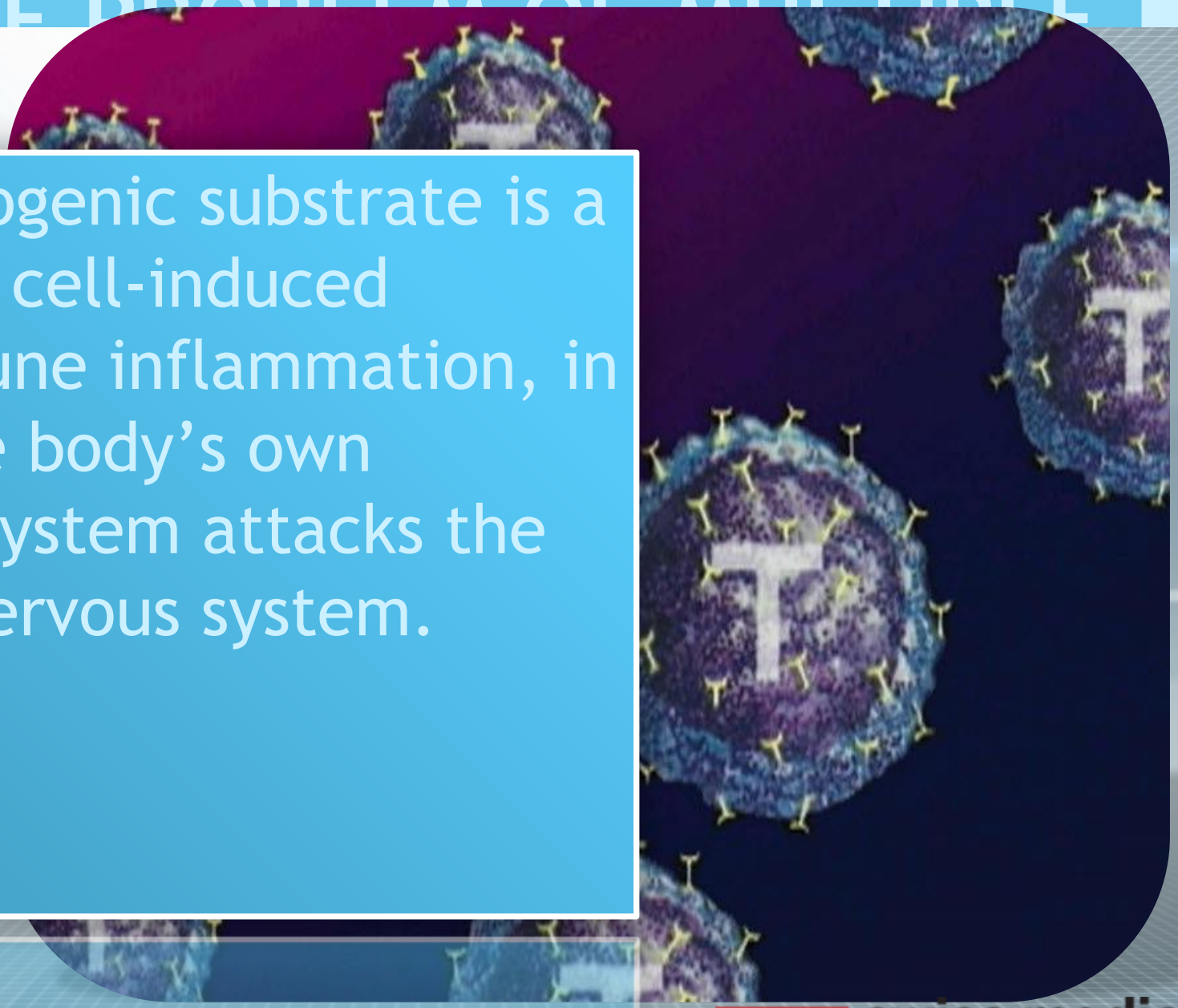
The pathogenic substrate is a chronic T cell-induced autoimmune inflammation, in which the body's own immune system attacks the central nervous system.



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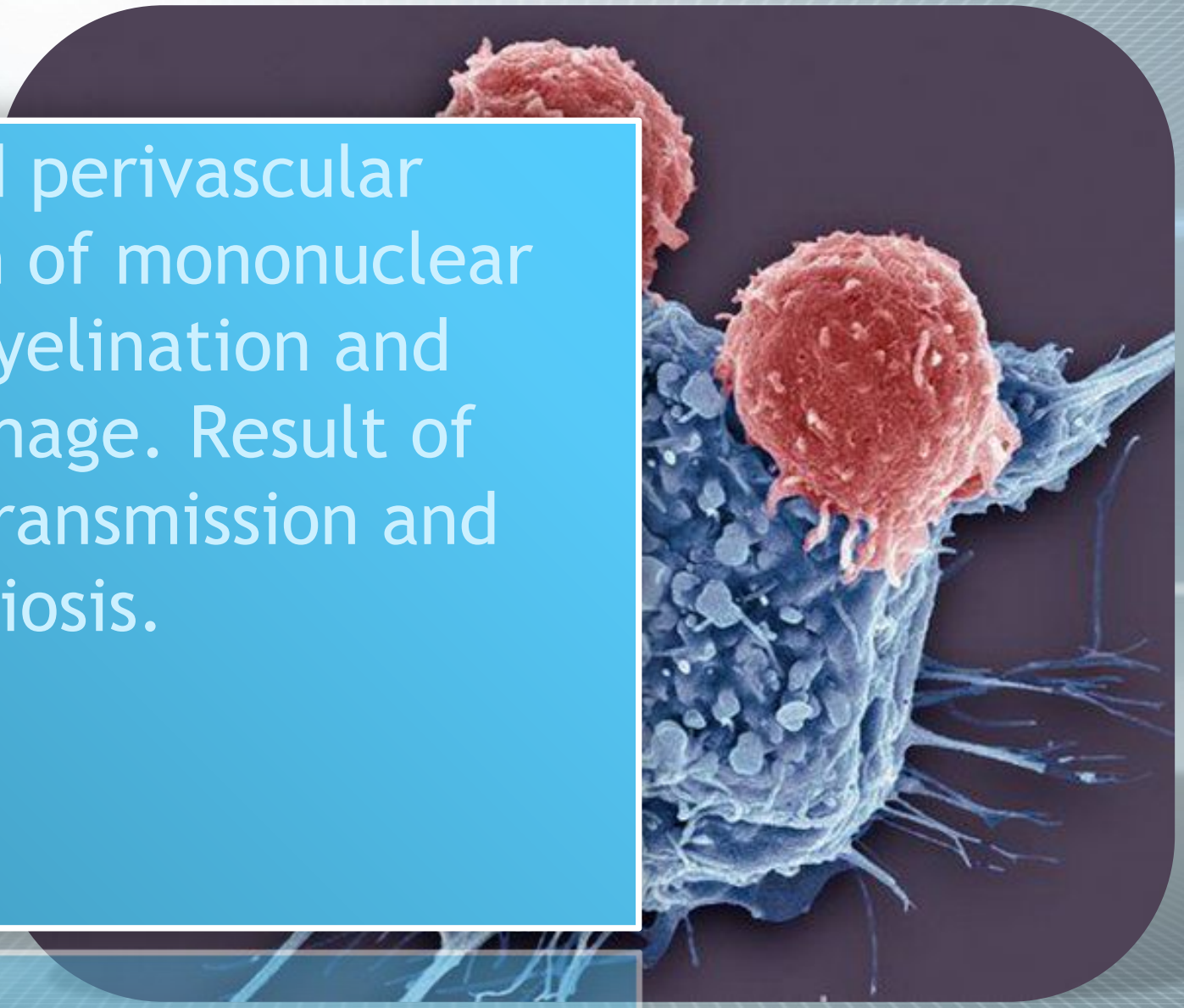
Manifested perivascular infiltration of mononuclear cells, demyelination and axonal damage. Result of diffusion transmission and reactive gliosis.



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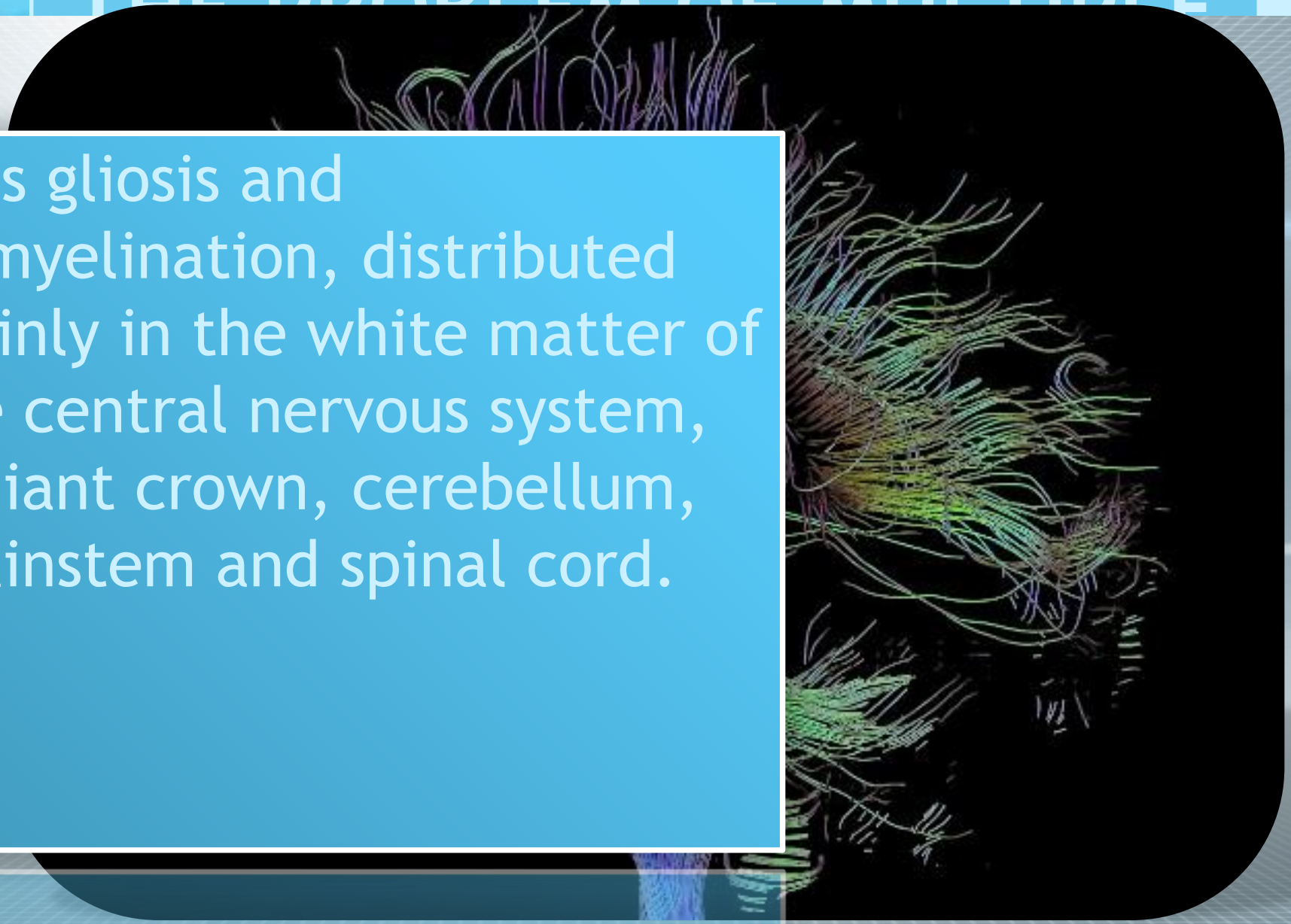

Lots gliosis and demyelination, distributed mainly in the white matter of the central nervous system, radiant crown, cerebellum, brainstem and spinal cord.

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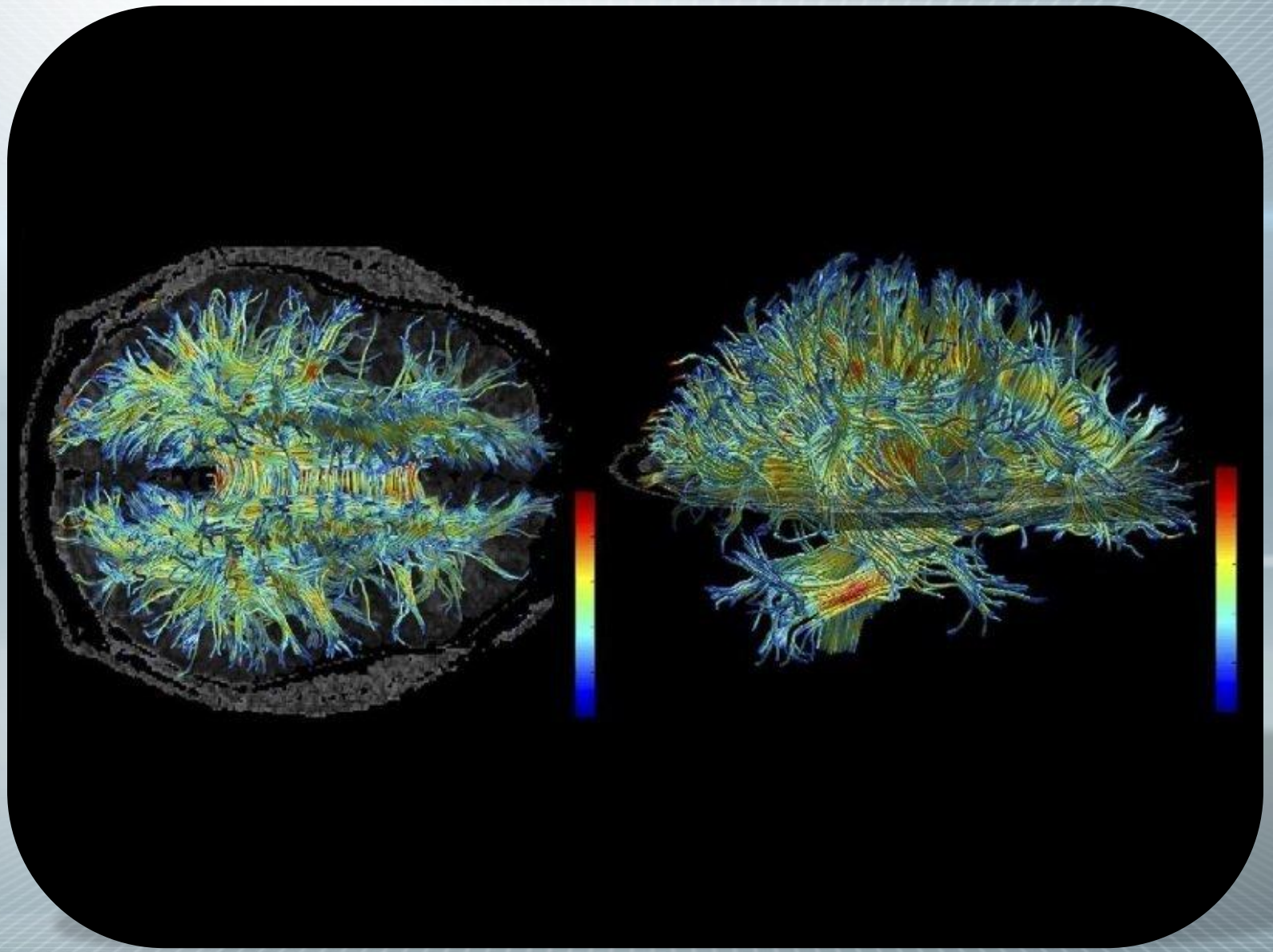

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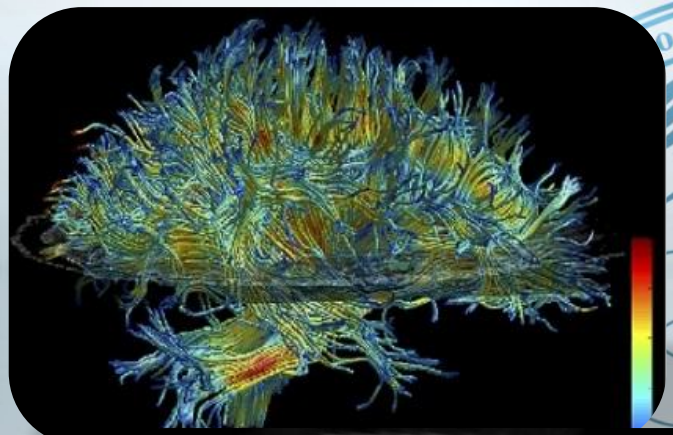

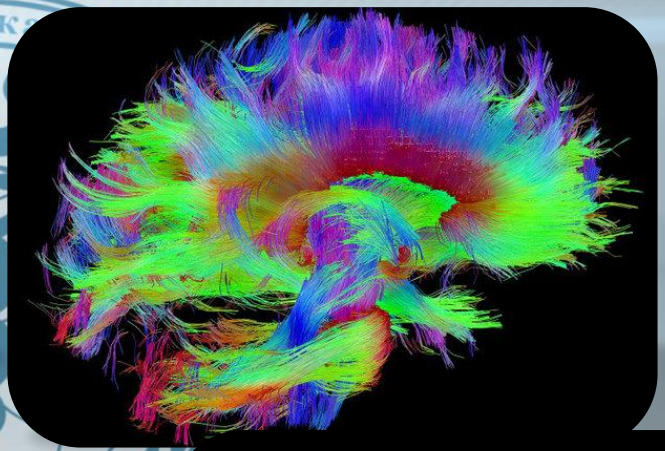

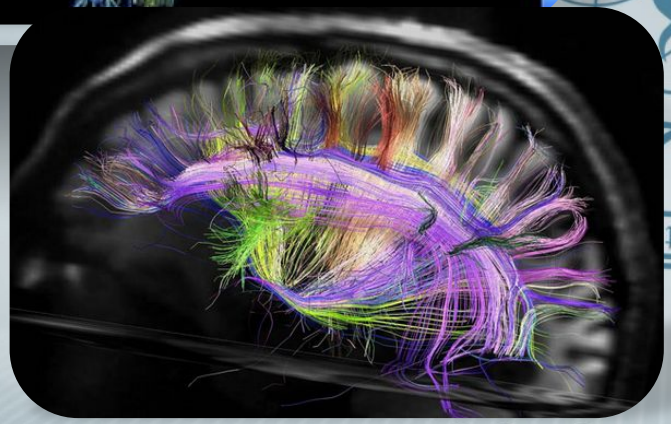

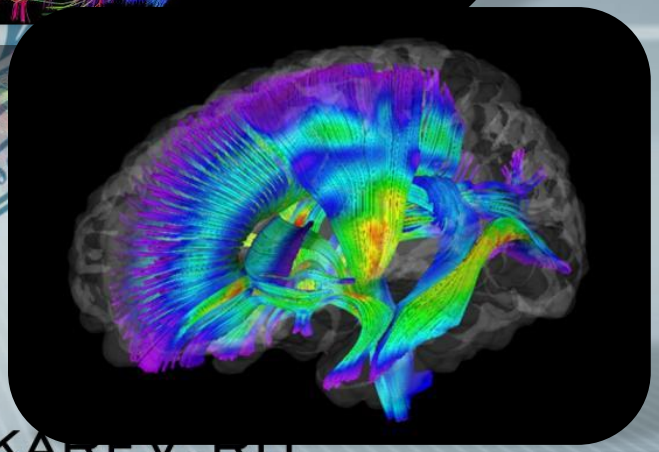

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The disease destroys the myelin protein preferably belongs to the structure of the membrane of oligodendrocytes

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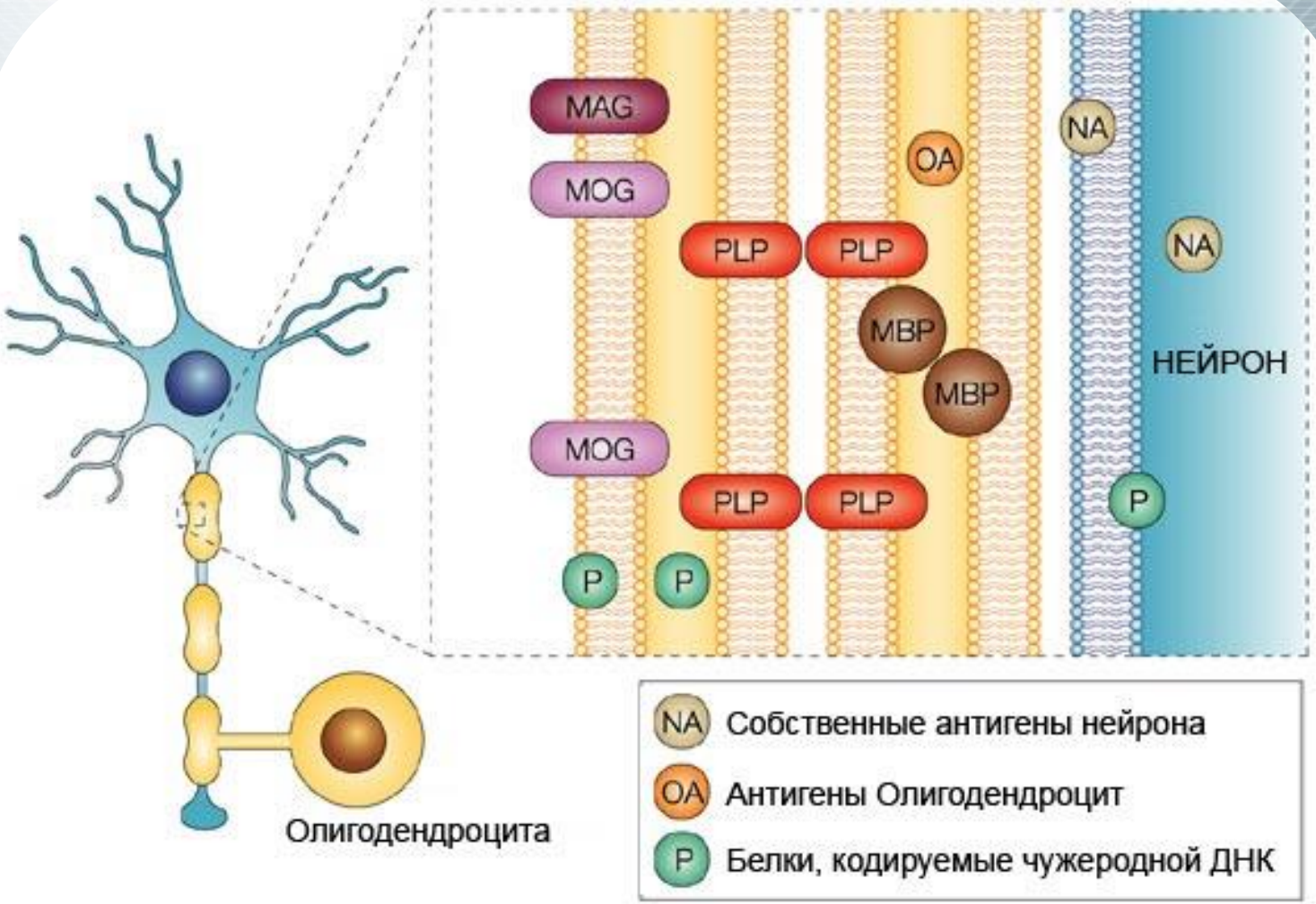

Рис.8 Белки миелиновой оболочки - мишени (антигены) иммунного ответа при РС
MAG - миелин-ассоциированный гликопротеин; **MBP** - основной белок миелина;
MOG - миелин-олигодендроцитарный гликопротеин; **PLP** - протеолипидный проте

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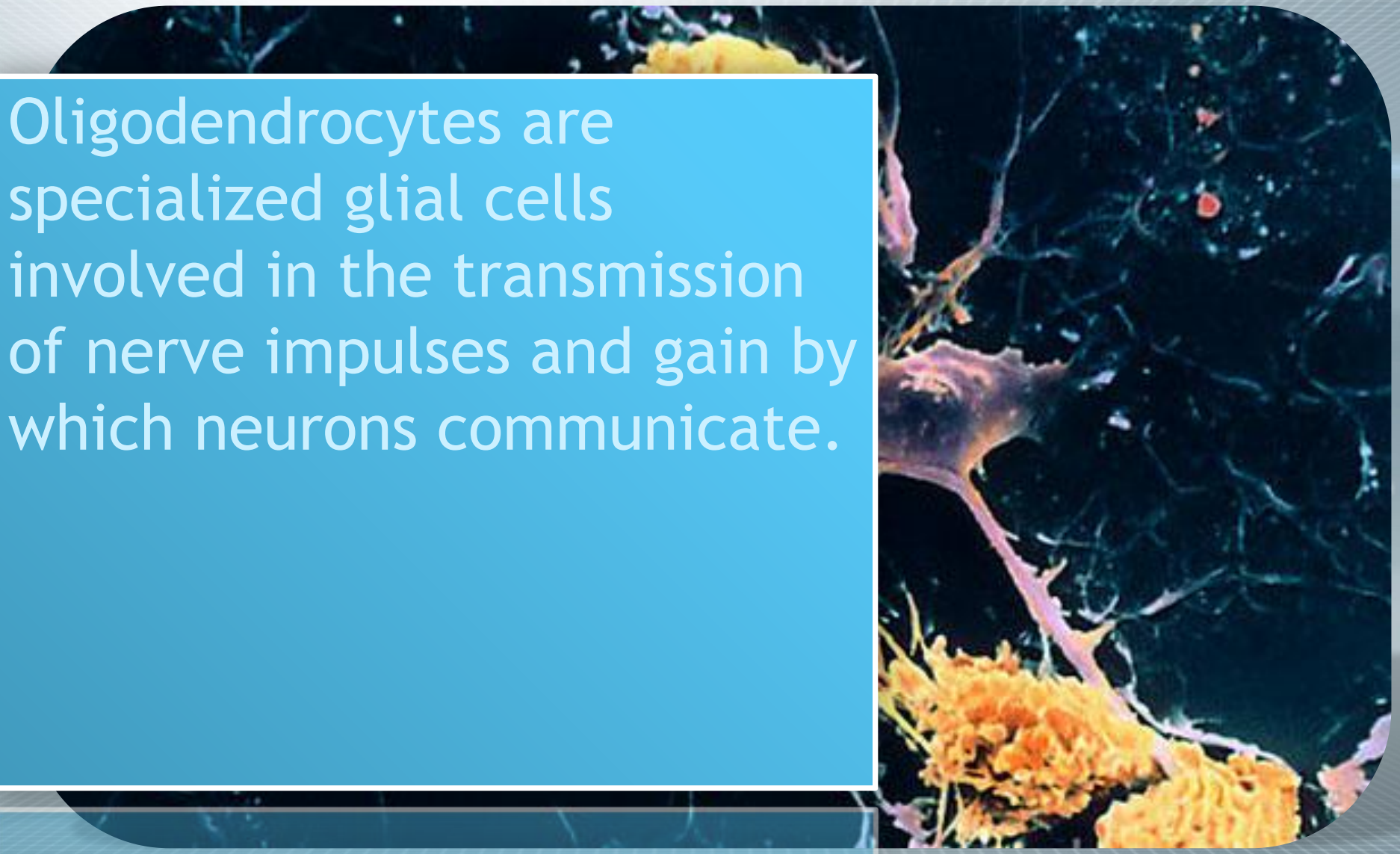
Oligodendrocytes are specialized glial cells involved in the transmission of nerve impulses and gain by which neurons communicate.



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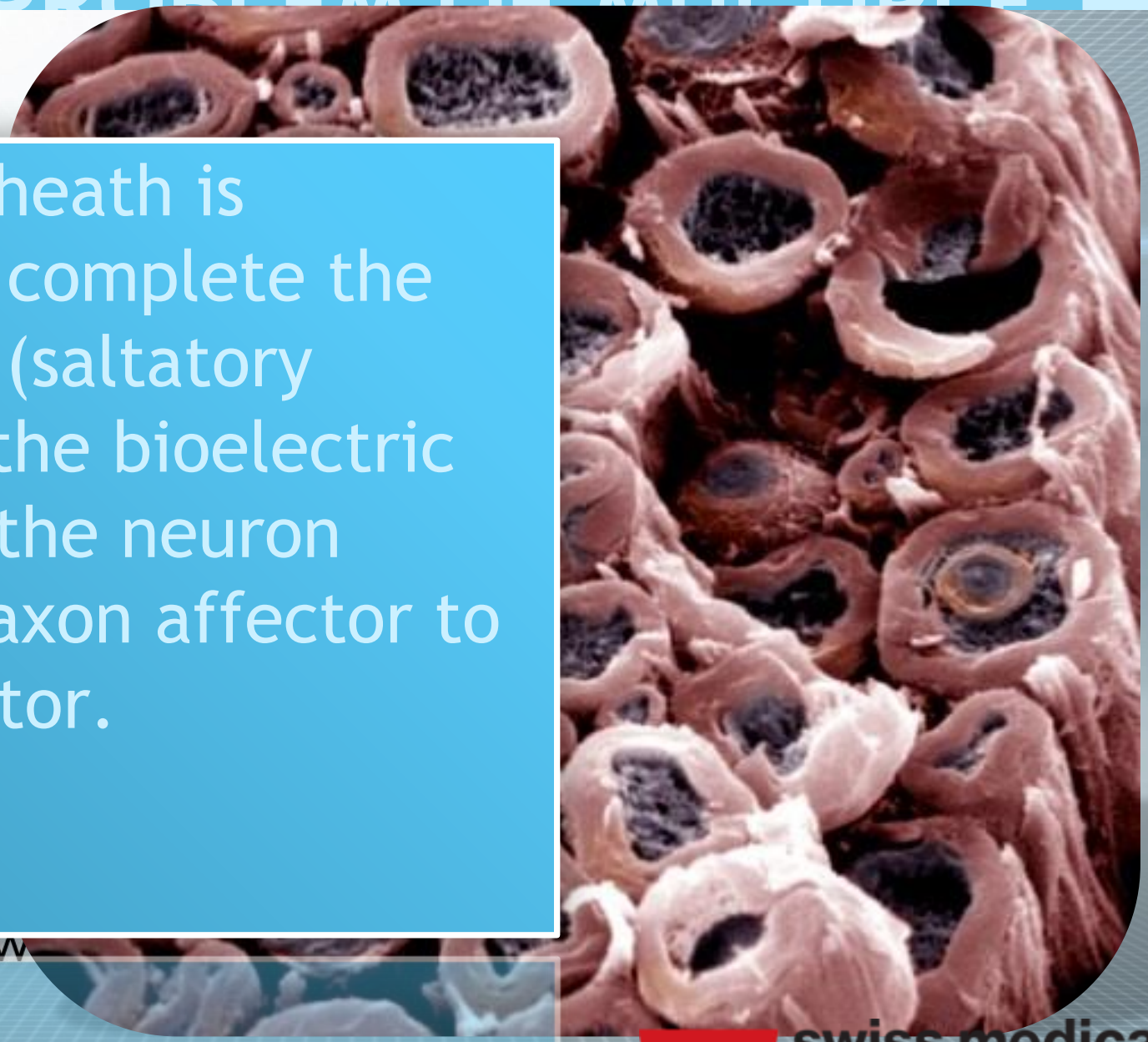

The myelin sheath is necessary to complete the transmission (saltatory conducting) the bioelectric signals from the neuron through the axon affector to neuron effector.

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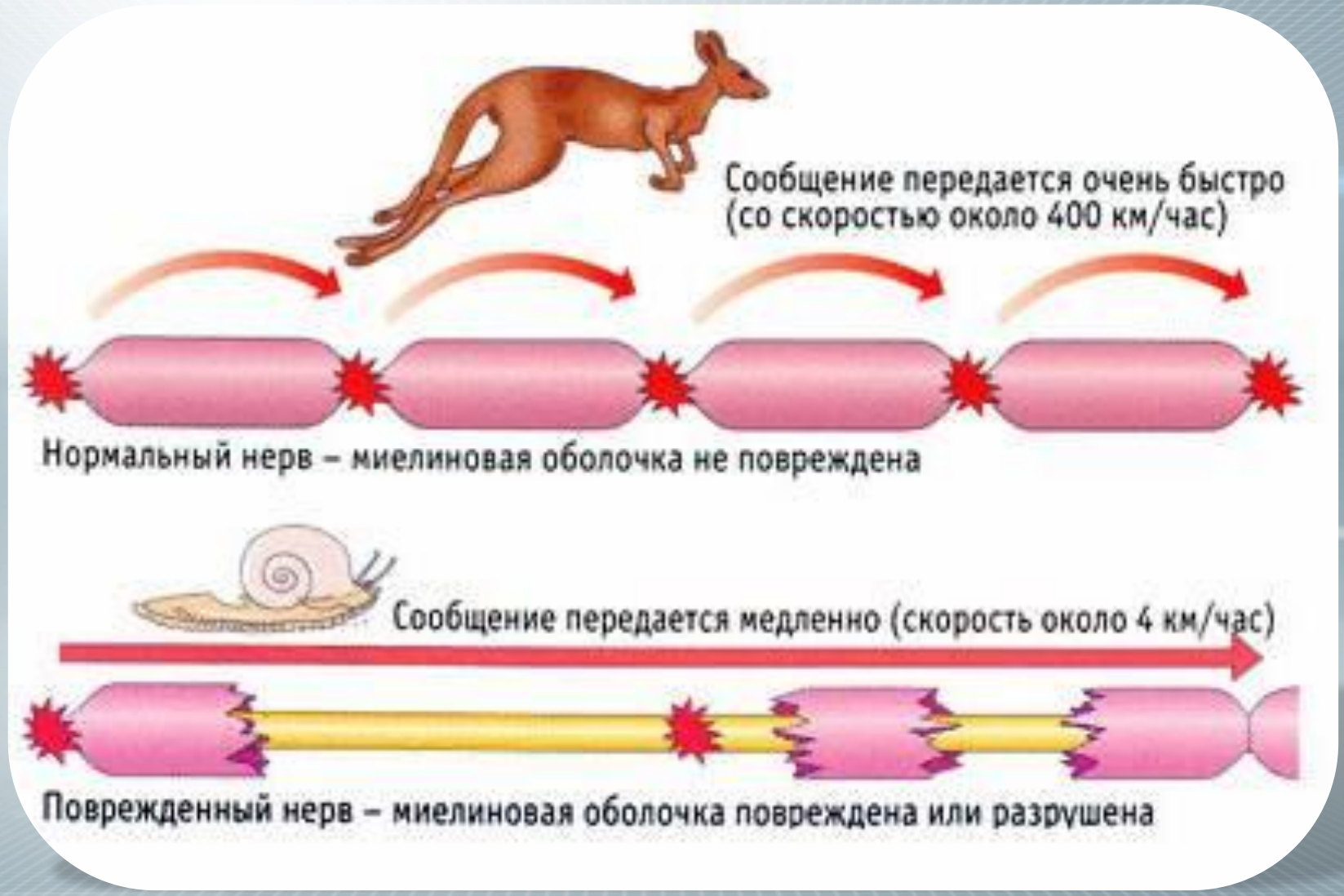

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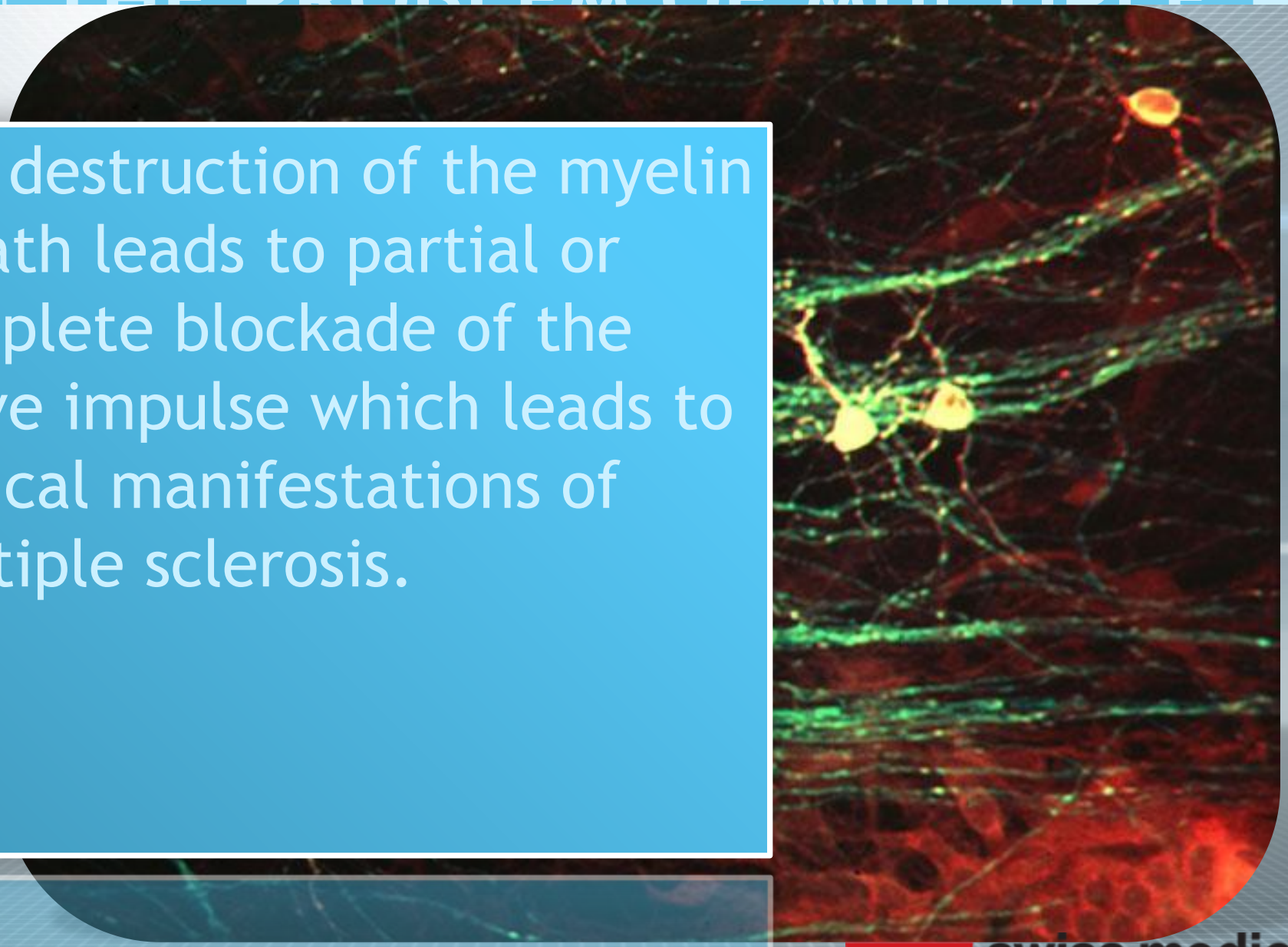
The destruction of the myelin sheath leads to partial or complete blockade of the nerve impulse which leads to clinical manifestations of multiple sclerosis.



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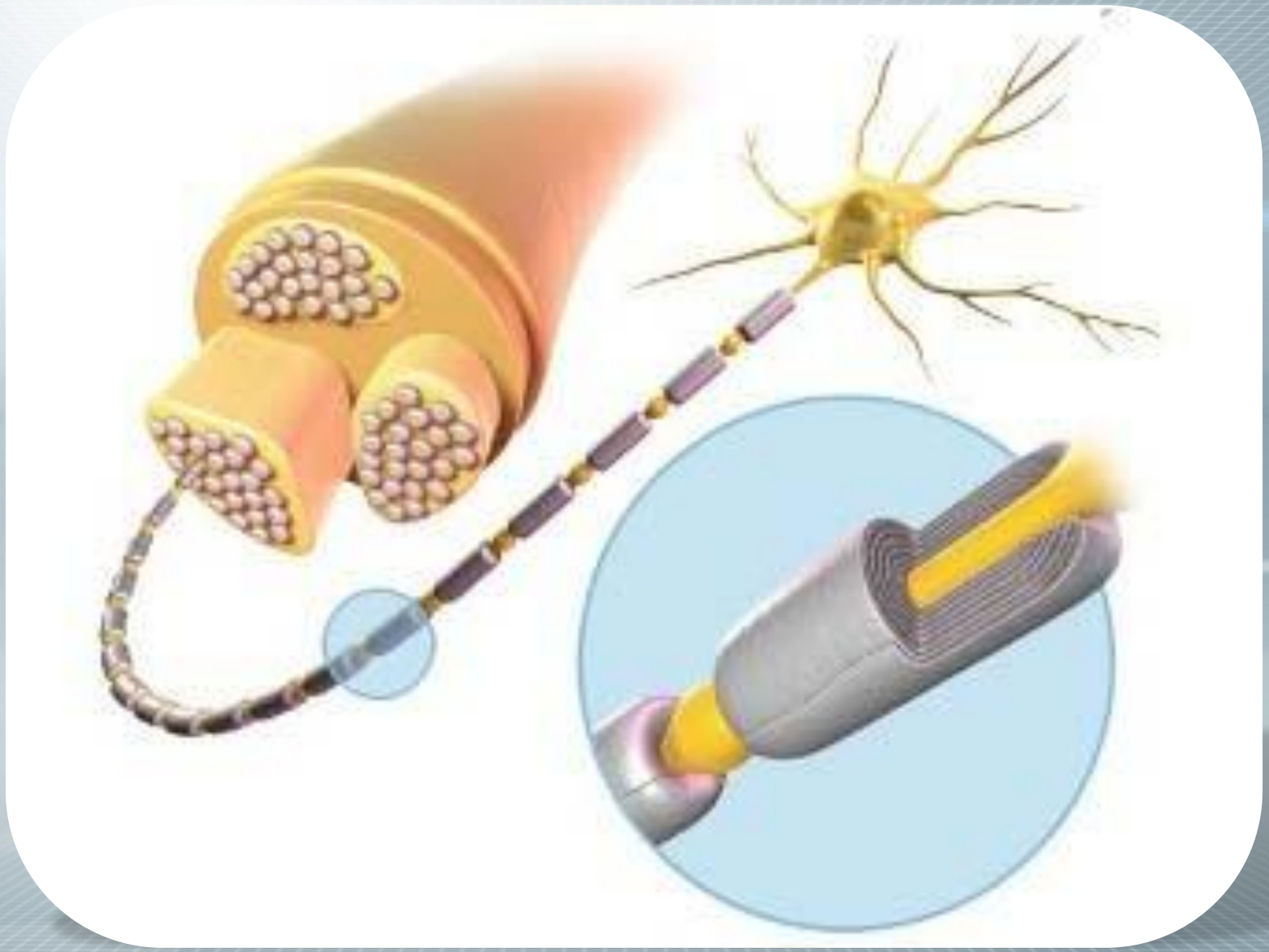

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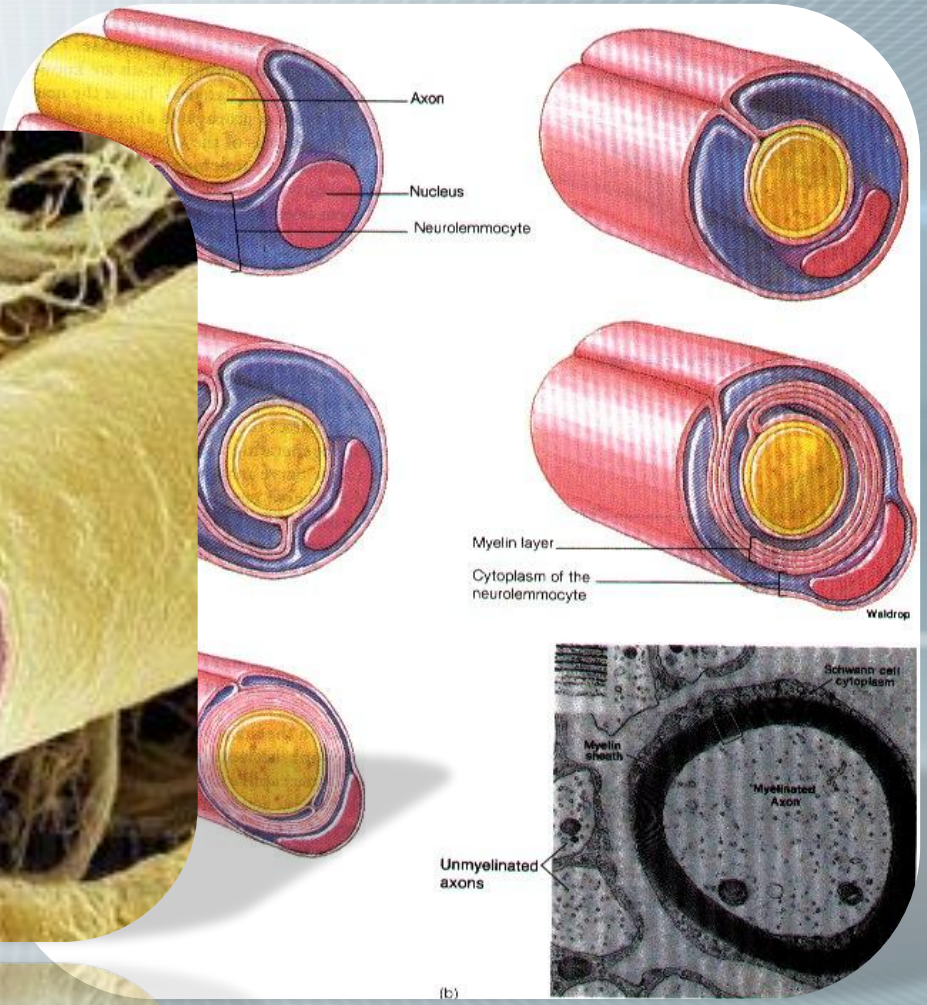

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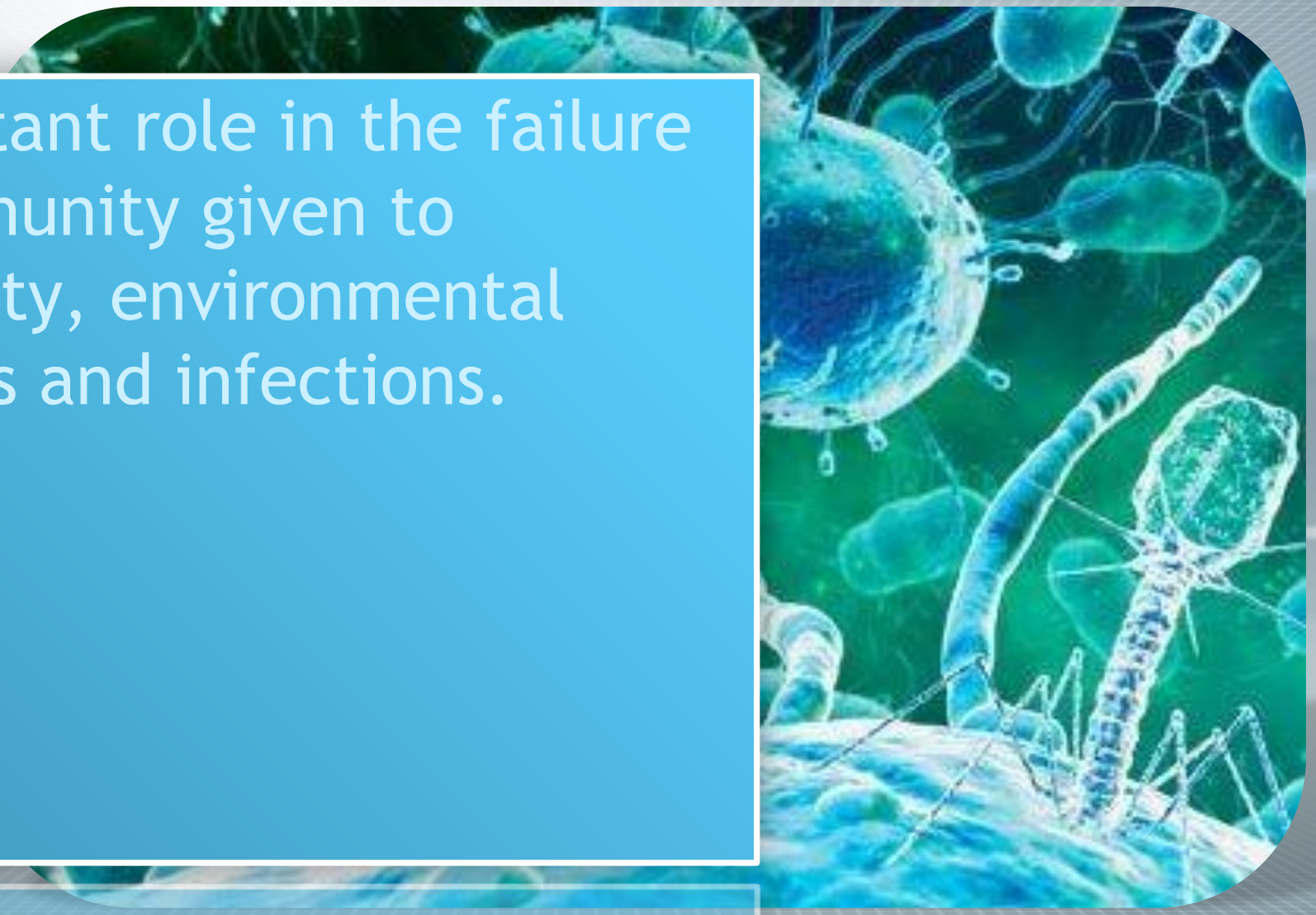
Important role in the failure of immunity given to heredity, environmental factors and infections.



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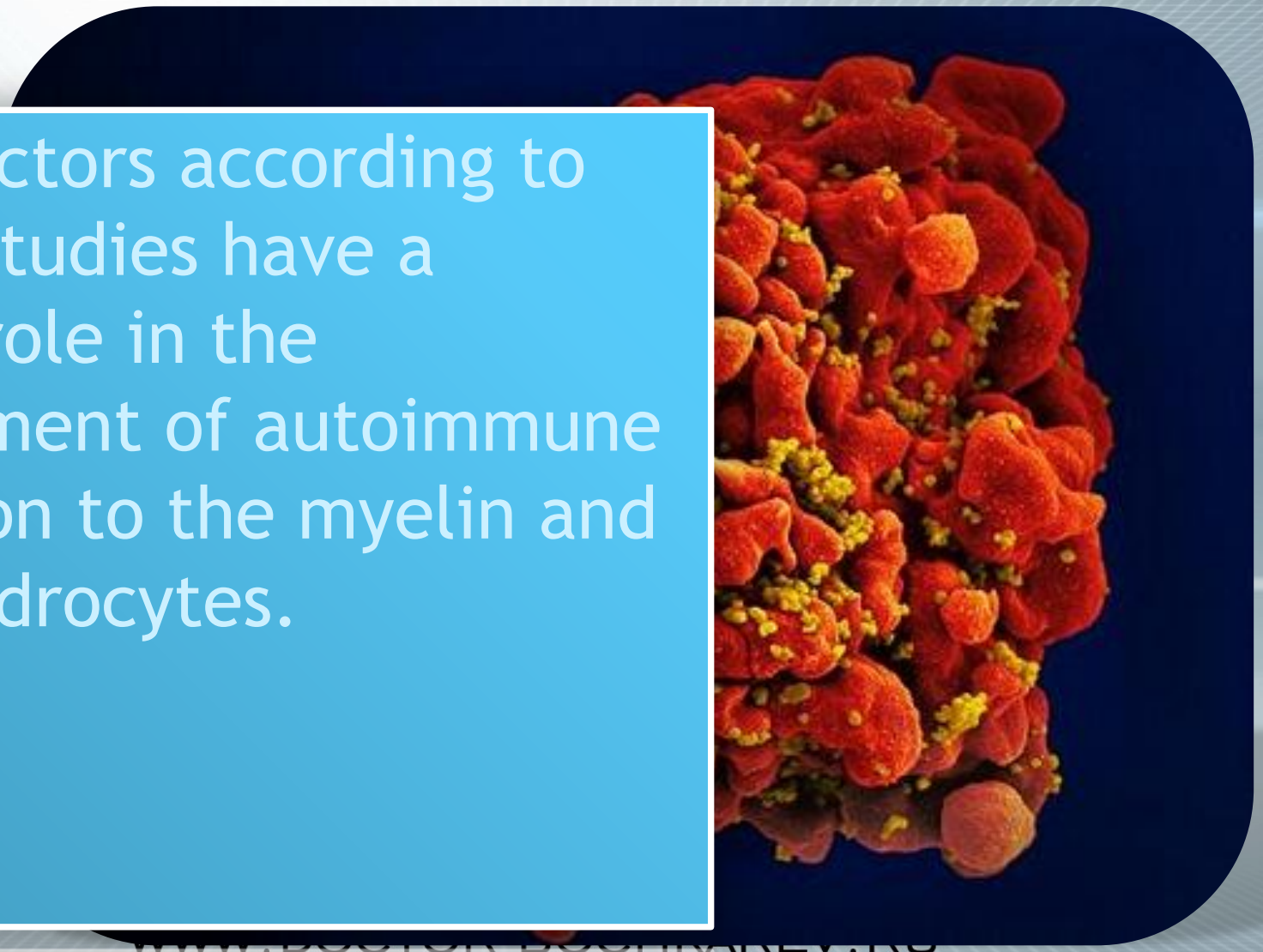
These factors according to various studies have a leading role in the development of autoimmune aggression to the myelin and oligodendrocytes.



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Also, some researchers play a key role in the development of autoimmune process, Ebstein-Barr virus.

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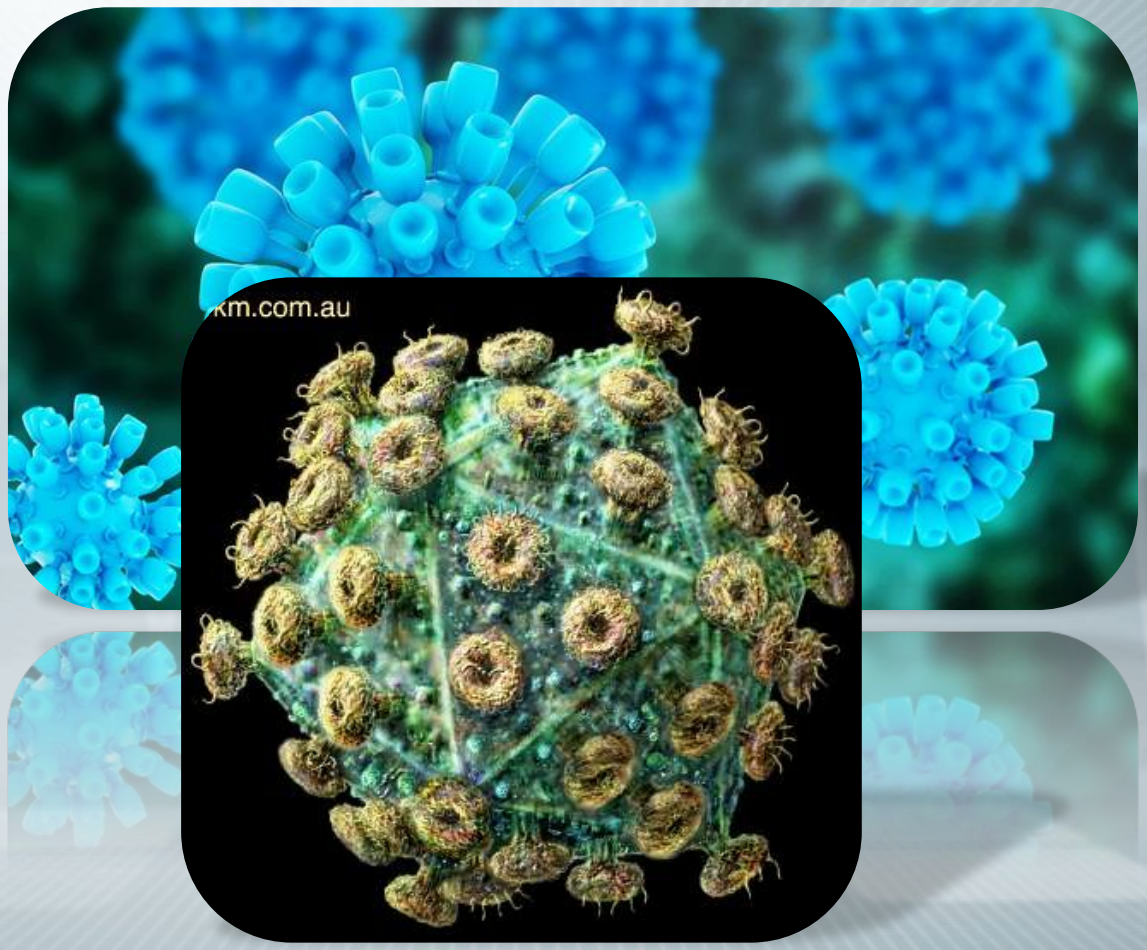

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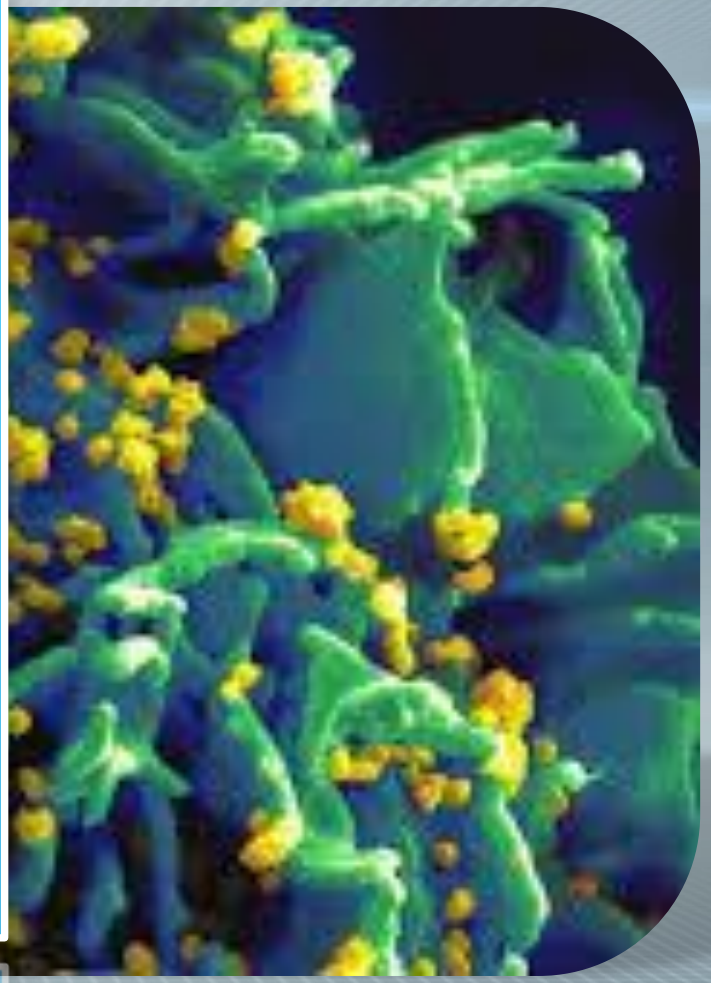
The virus enters the body in early childhood and persists for a long time manifests infectious mononucleosis or suspected autoimmune demyelination.



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Also noted the key patterns of response of the organism to various environmental influences.

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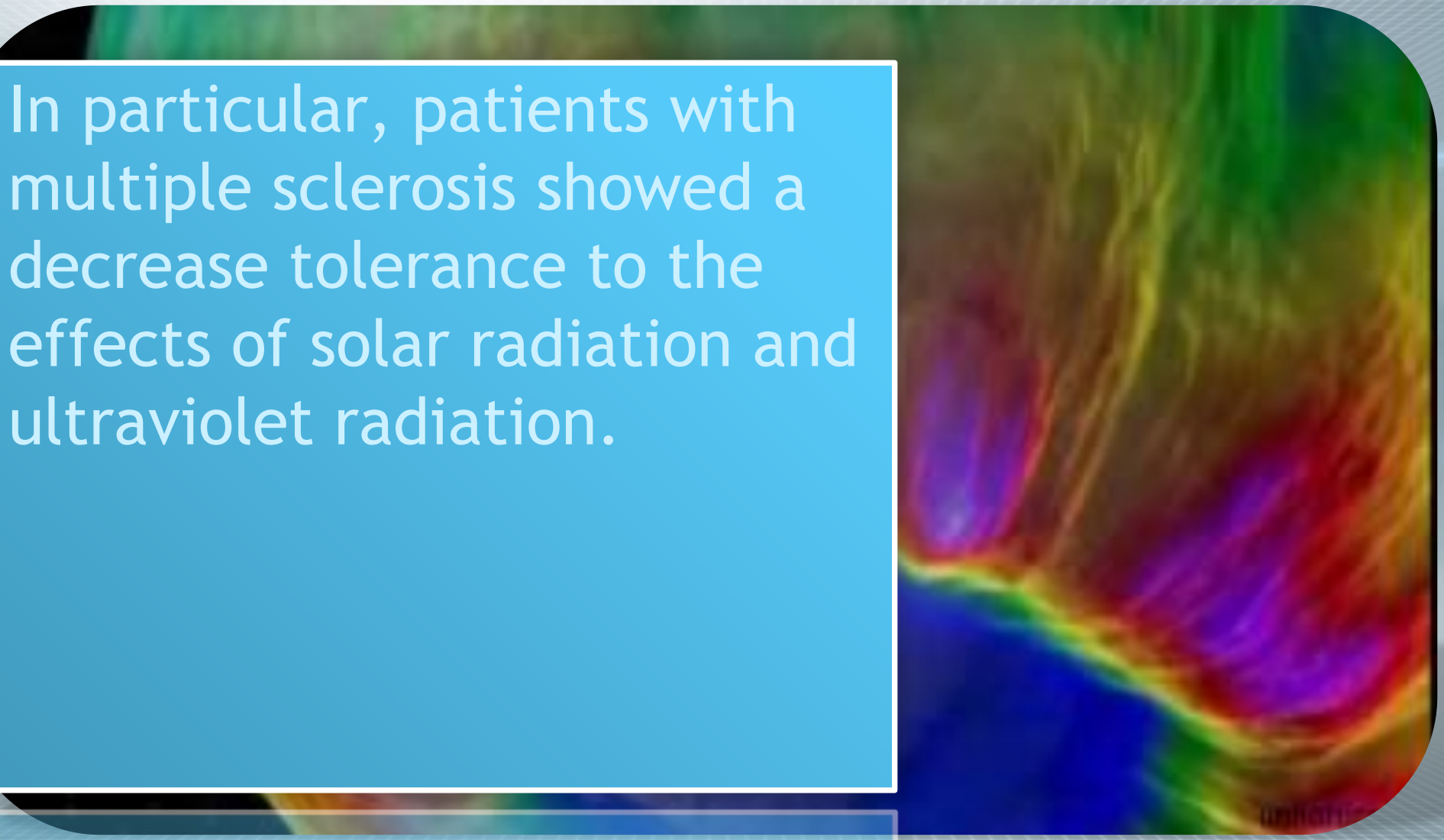
In particular, patients with multiple sclerosis showed a decrease tolerance to the effects of solar radiation and ultraviolet radiation.



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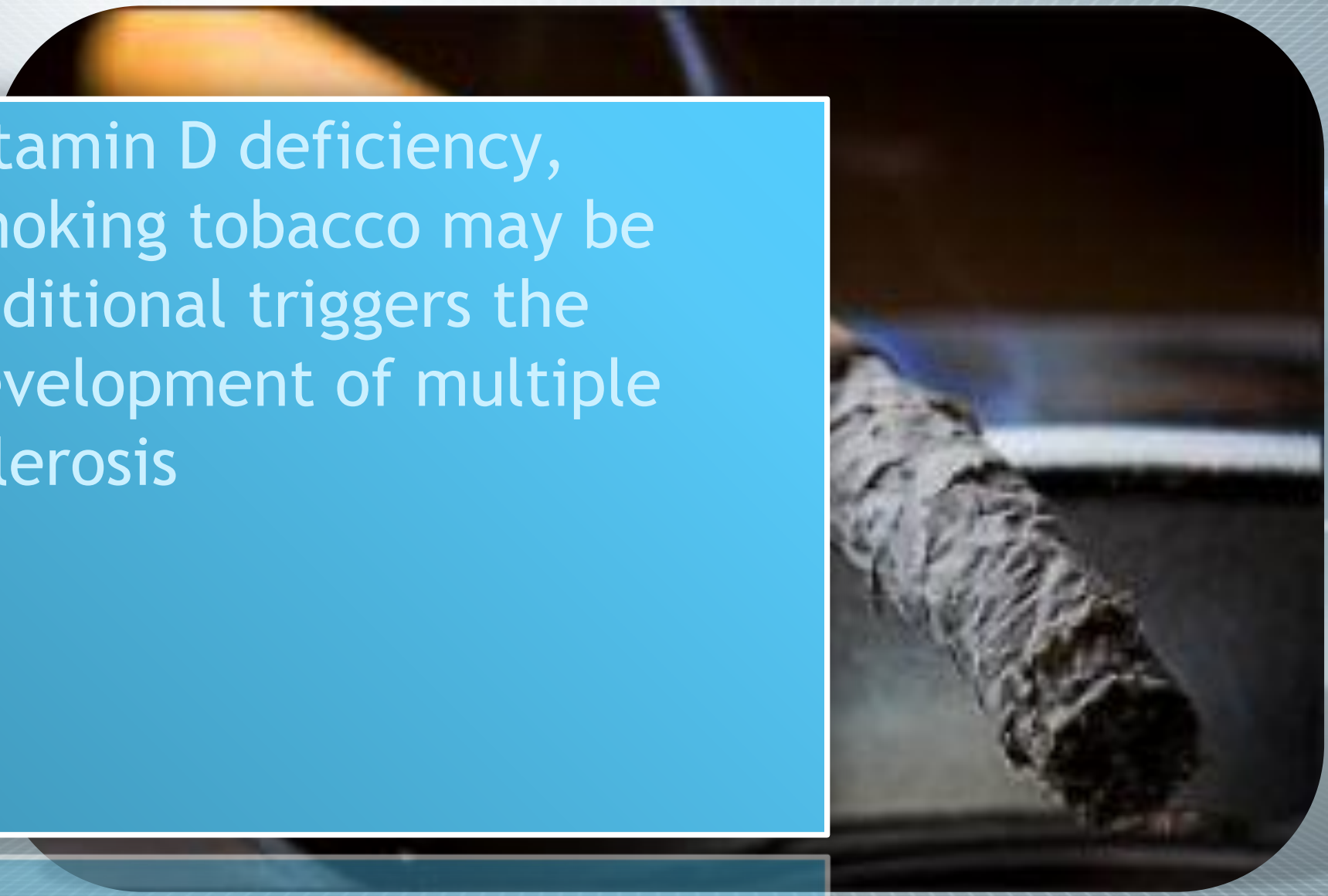
Vitamin D deficiency, smoking tobacco may be additional triggers the development of multiple sclerosis



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THE PROBLEM OF MULTIPLE

EPIDEMIOLOGY

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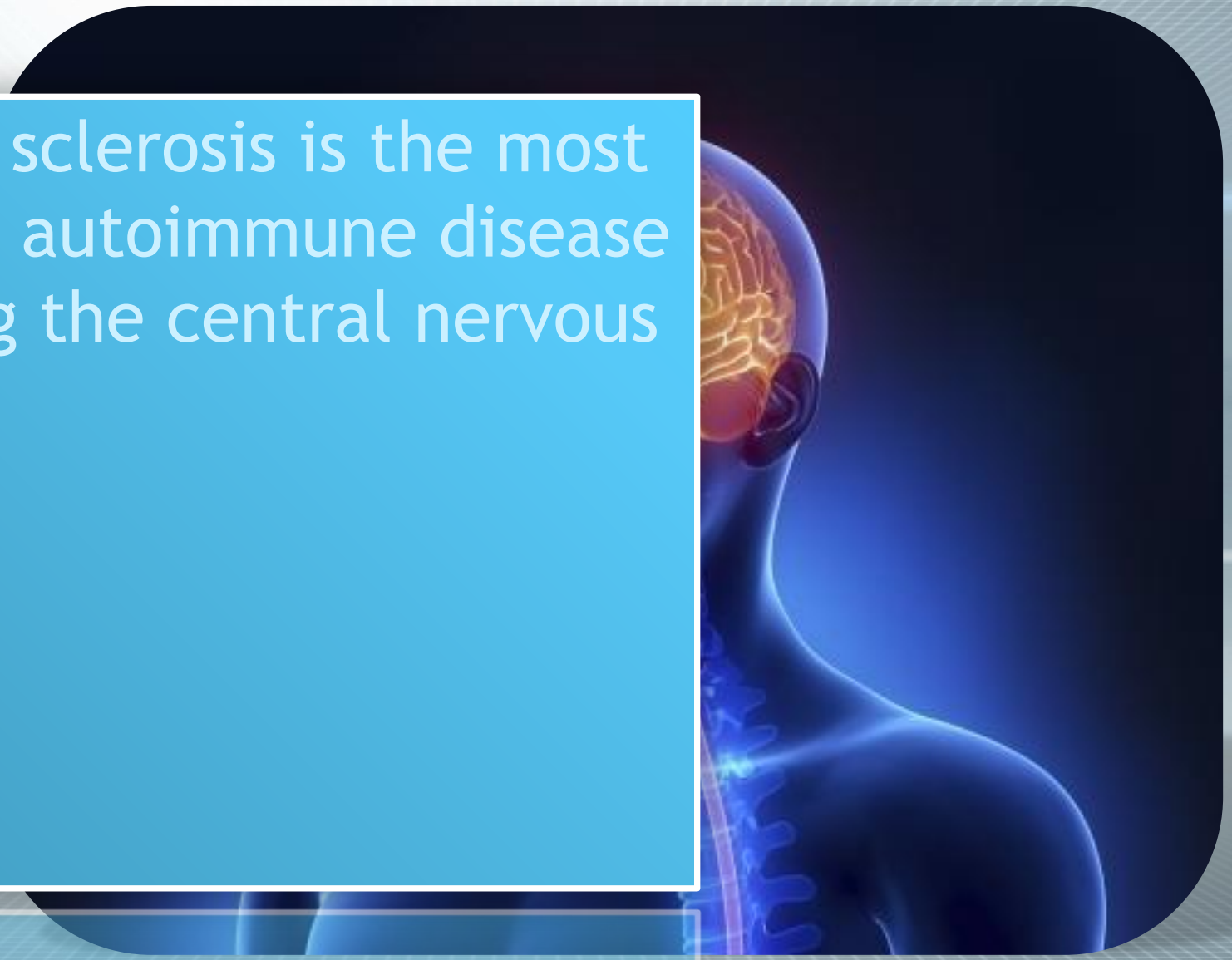
Multiple sclerosis is the most common autoimmune disease affecting the central nervous system.



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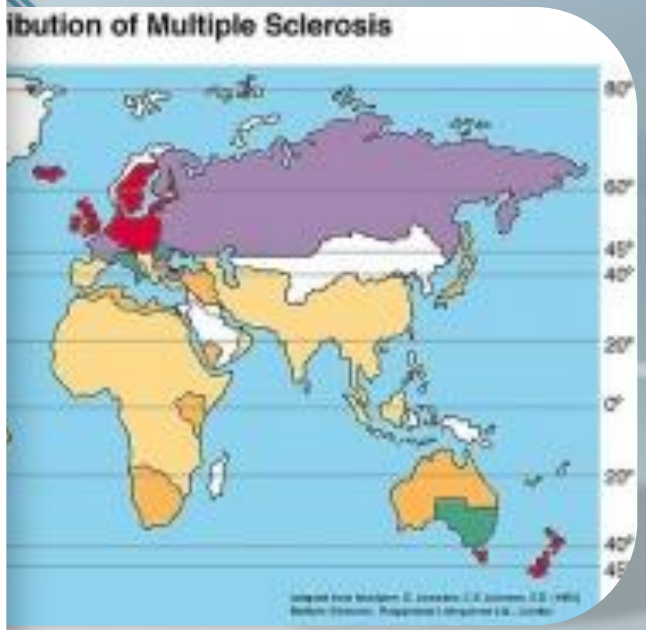
The statistics for 2008 show that MS suffer from 2 to 2.5 million people in the entire population of the world in its various climate zones, often in northern latitudes.



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There was a statistically upward trend in the incidence of MS. In 2013, 20,000 people died because of the DS.

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At the same time in 1990 such cases were registered in 12000.

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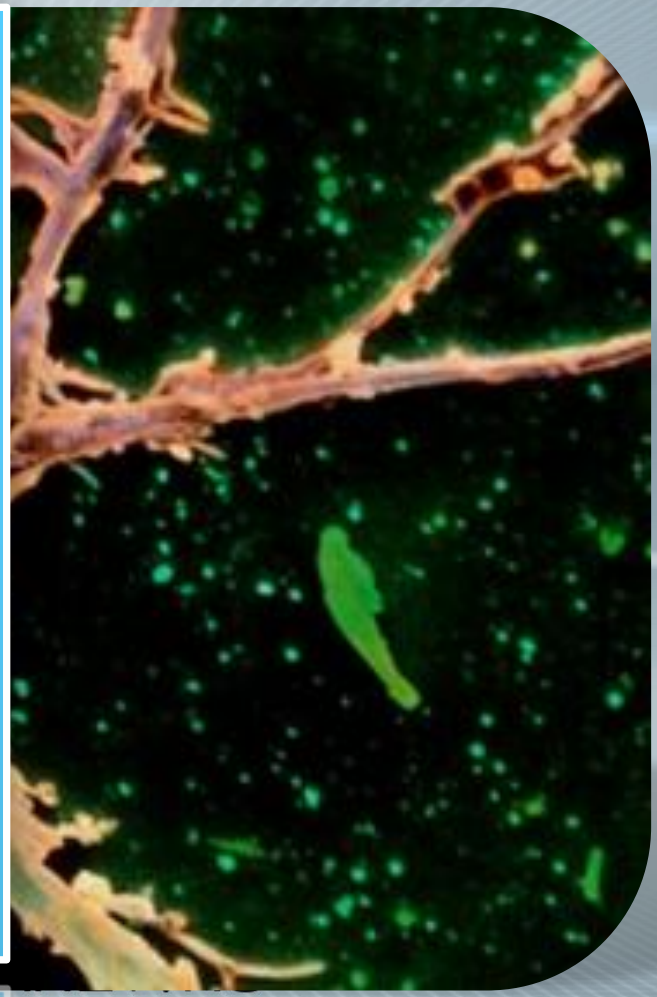
THE PROBLEM OF MULTIPLE

The disease usually debuts at the age of 20 to 50 years. Most earlier age groups.



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THE PROBLEM OF MULTIPLE

Women suffer from MS almost twice as often as men. The life expectancy of an average of 5 to 10 years lower than that of the healthy population.

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THE PROBLEM OF MULTIPLE

DIAGNOSTICS

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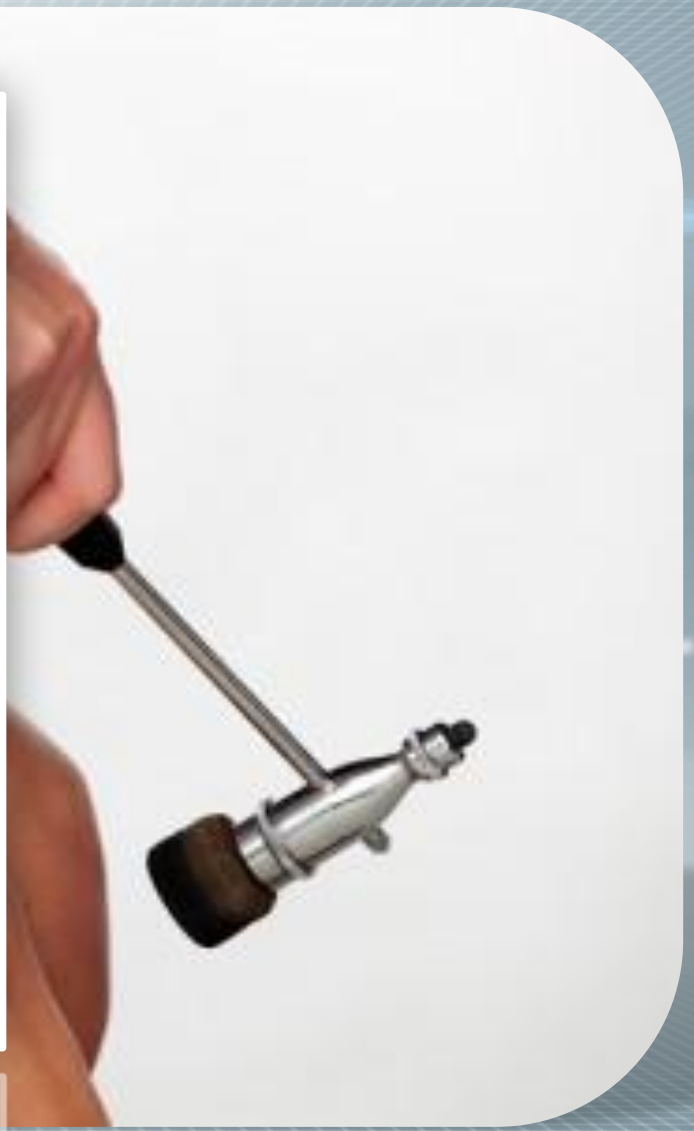
THE PROBLEM OF MULTIPLE

For the diagnosis of multiple sclerosis requires a detailed medical history, a thorough neurological examination with the use of special tests and procedures.



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THE PROBLEM OF MULTIPLE

Field selection of clinical symptoms and combining them into syndromes exhibit a preliminary diagnosis of the possible presence of demyelination.

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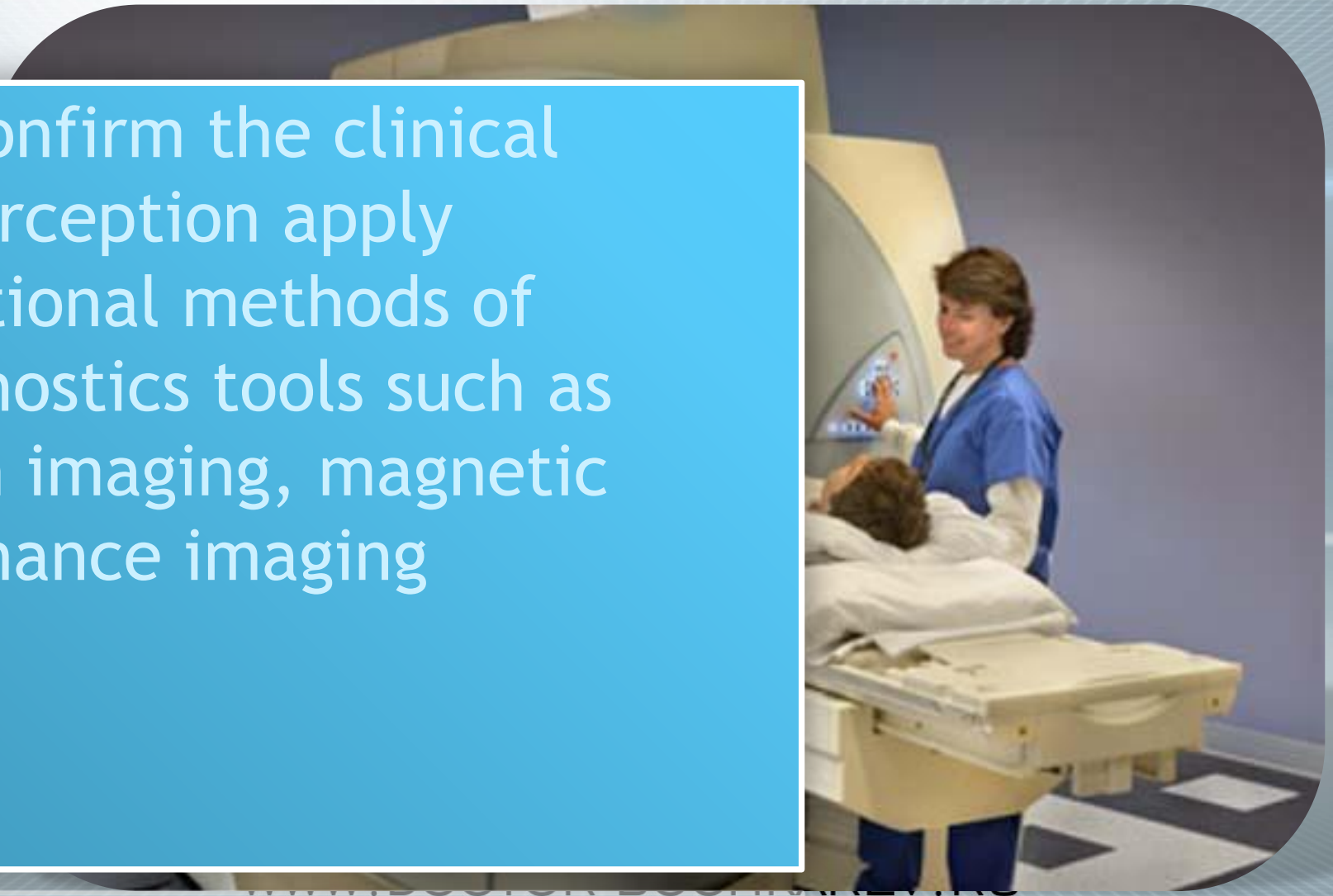
THE PROBLEM OF MULTIPLE

To confirm the clinical apperception apply additional methods of diagnostics tools such as brain imaging, magnetic resonance imaging



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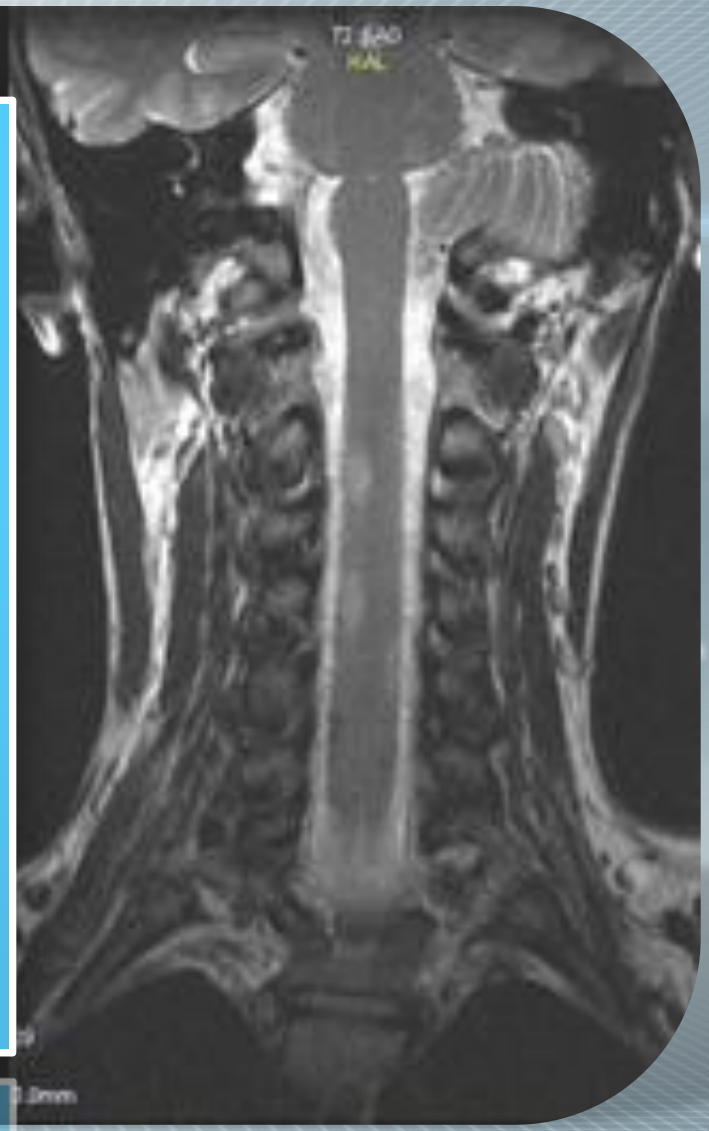
THE PROBLEM OF MULTIPLE

MRI study demyelinating program (FLAIR - mode, T1-T2-weighted images, etc.



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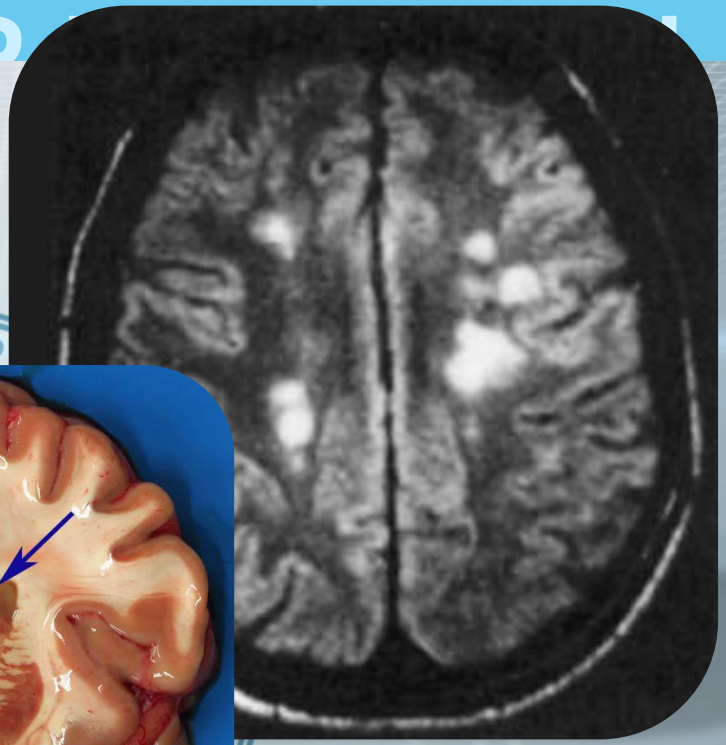
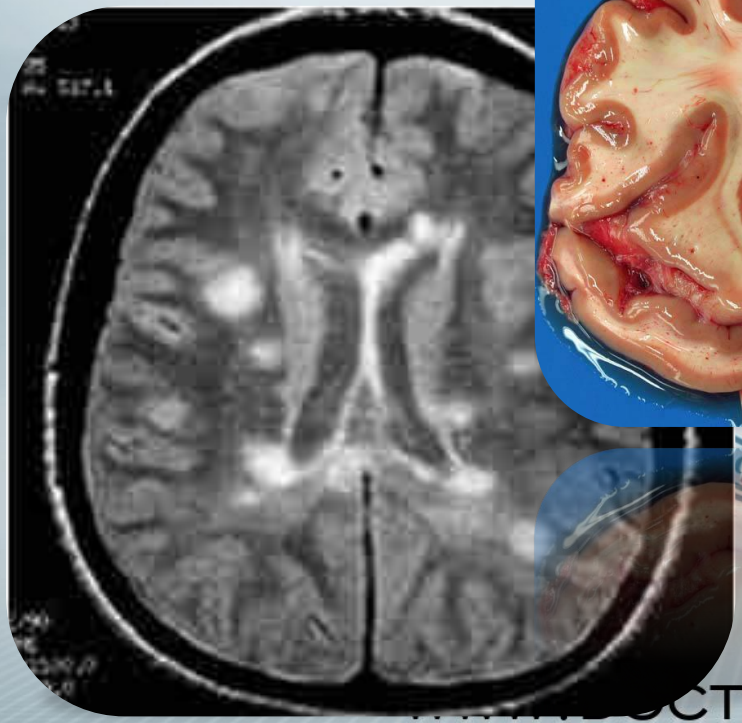
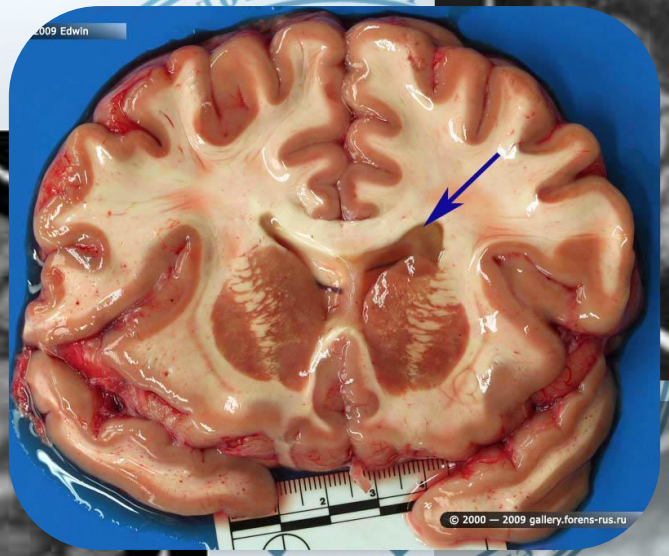
ОБЩИЙ ОБЗОР







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THE PROBLEM OF MULTIPLE

Then, a lumbar puncture and cerebrospinal fluid obtained is investigated for the presence of Monoclonal antibodies to myelin basic protein.

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THE PROBLEM OF MULTIPLE

For a more precise characterization demyelinating process of resorting to additional consultations related professionals such as a psychiatrist, an immunologist.

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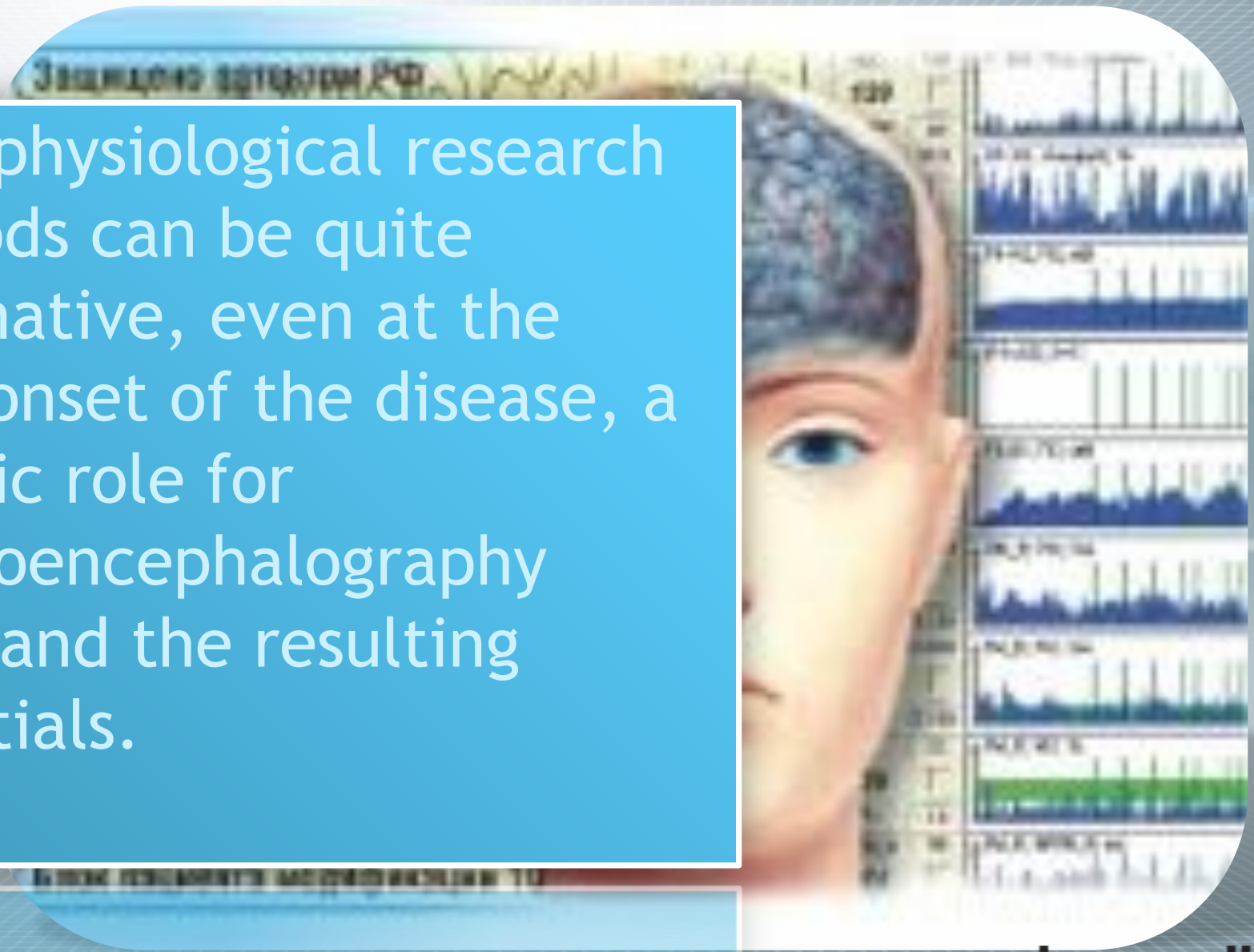
THE PROBLEM OF MULTIPLE

Neurophysiological research methods can be quite informative, even at the early onset of the disease, a specific role for electroencephalography (EEG) and the resulting potentials.



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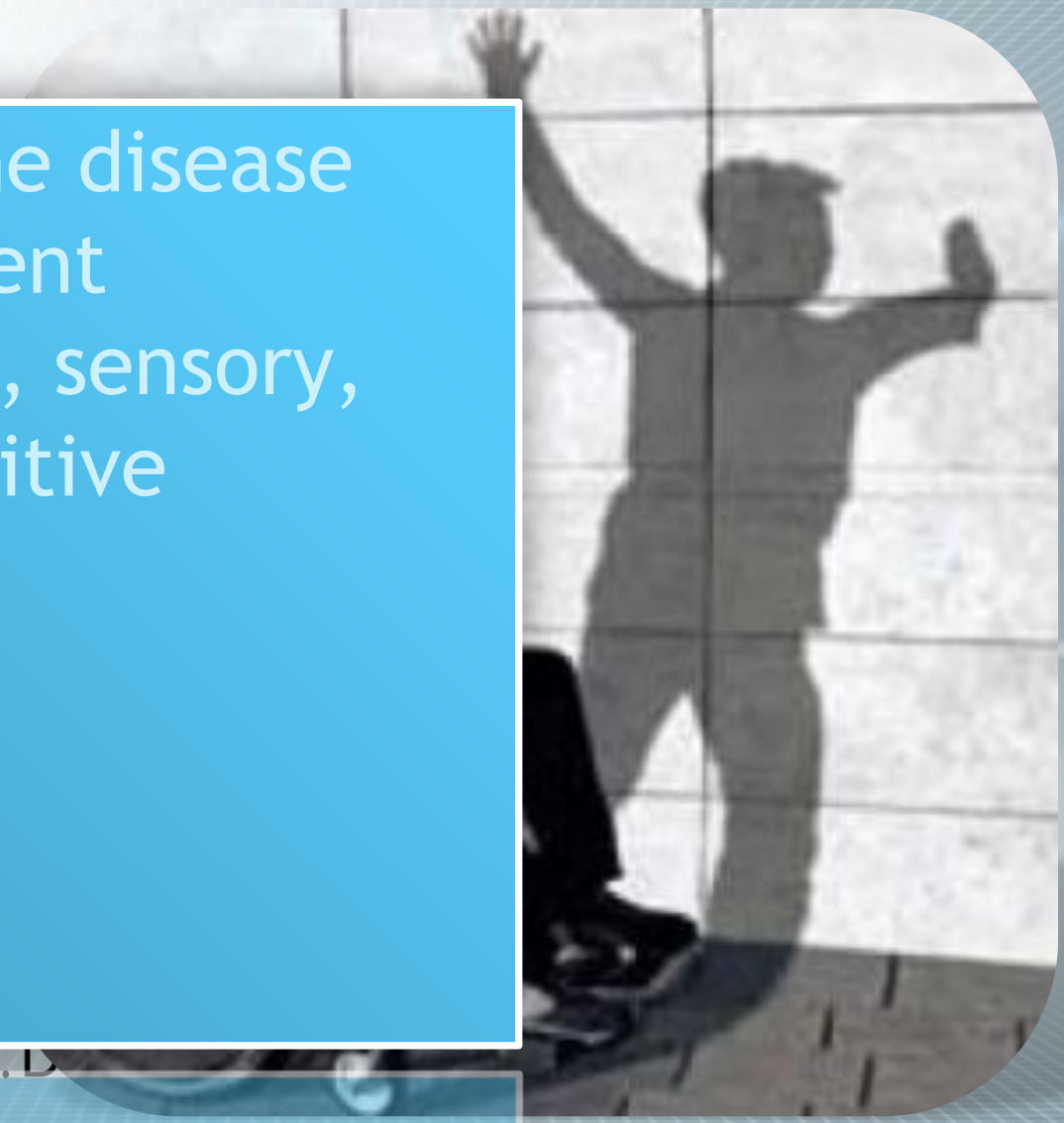
THE PROBLEM OF MULTIPLE

Progression of the disease leads to permanent disability, motor, sensory, mental and cognitive disorders.



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THE PROBLEM OF MULTIPLE

TREATMENT

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THE PROBLEM OF MULTIPLE

Treatment of multiple sclerosis are not currently found.

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THE PROBLEM OF MULTIPLE

Until the end is not clear pathophysiological mechanism of occurrence of the system demyelination. For this reason, it has not yet developed etiopathogenetic treatment.

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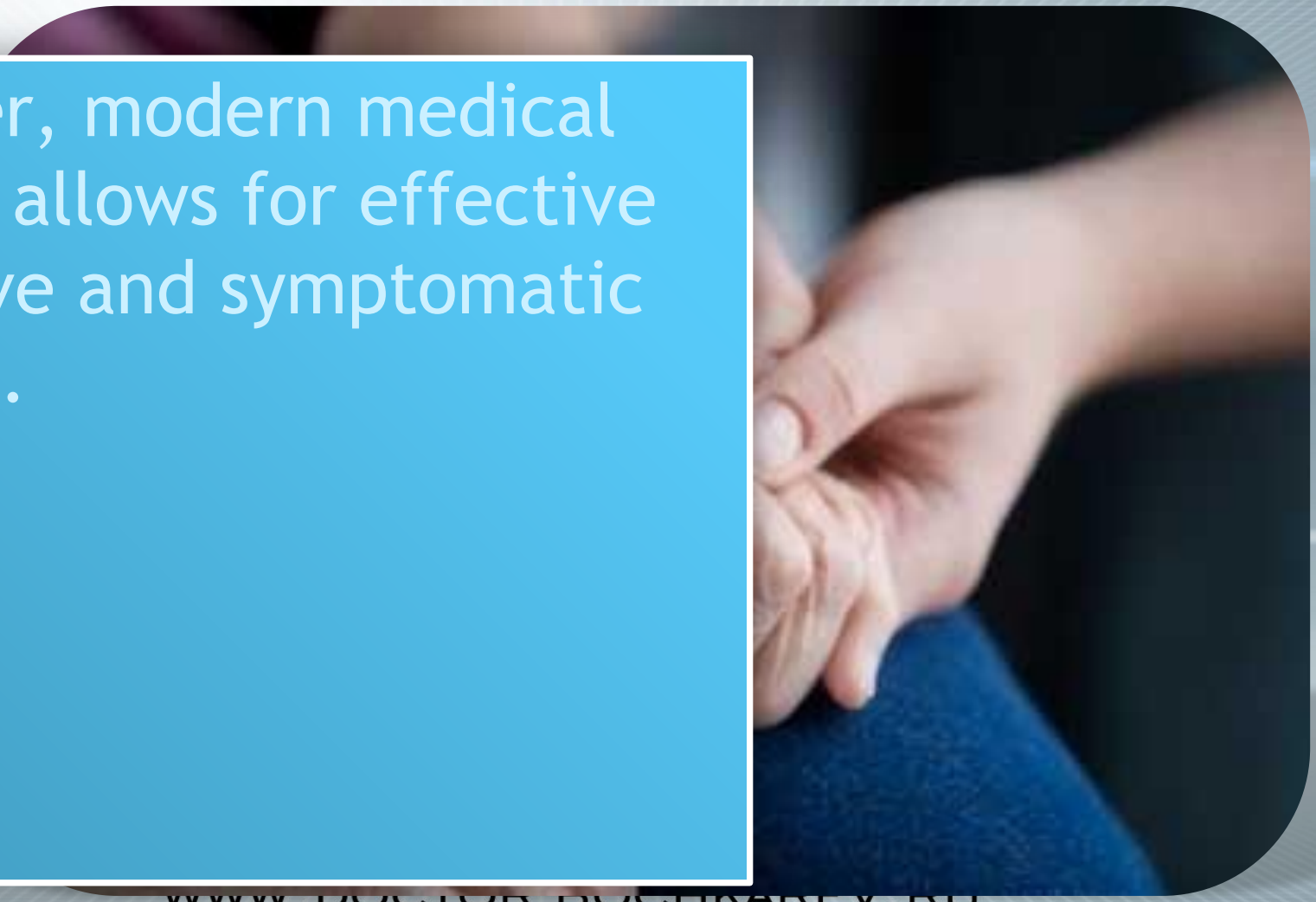
THE PROBLEM OF MULTIPLE

However, modern medical science allows for effective palliative and symptomatic therapy.



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THE PROBLEM OF MULTIPLE

Designed and tested international standards of treatment that aimed at improving the quality of life of patients and facilitate the elimination of symptoms.

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THE PROBLEM OF MULTIPLE

Strategic effect of therapy aims at reducing the recurrence of, reducing the number of attacks, increased longevity of patients.

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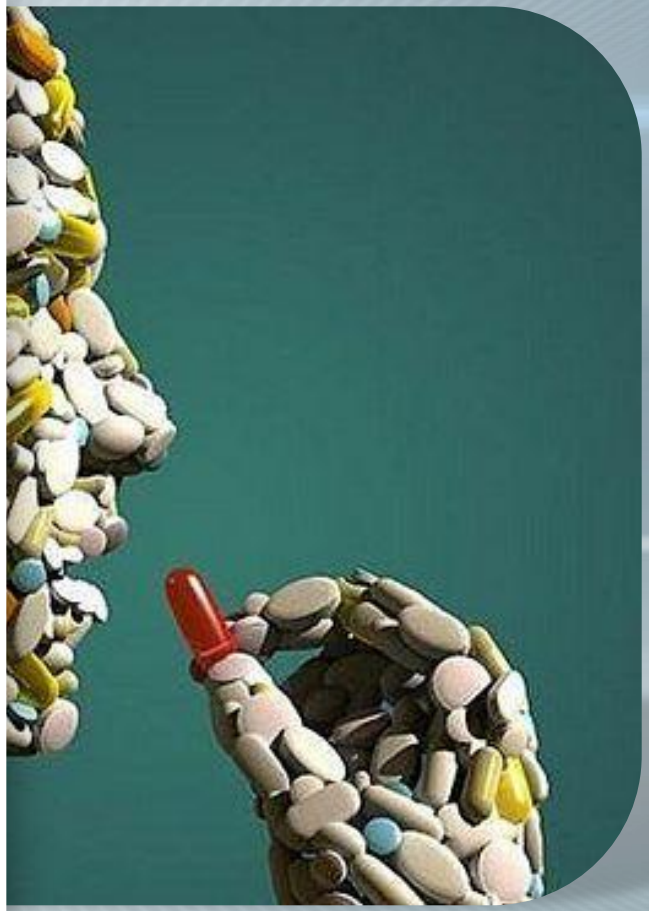
THE PROBLEM OF MULTIPLE

For these purposes at the current time successfully passed clinical trials and actively introducing modern medicines.



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THE PROBLEM OF MULTIPLE

Treatment algorithms, individual approach to reparative regeneration and physiotherapy rehabilitation of patients with multiple sclerosis.

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THE PROBLEM OF MULTIPLE

Tested and implemented new cutting-edge biotech treatments. Studies conducted in the field of regenerative medicine using stem cells and other bioengineering technology

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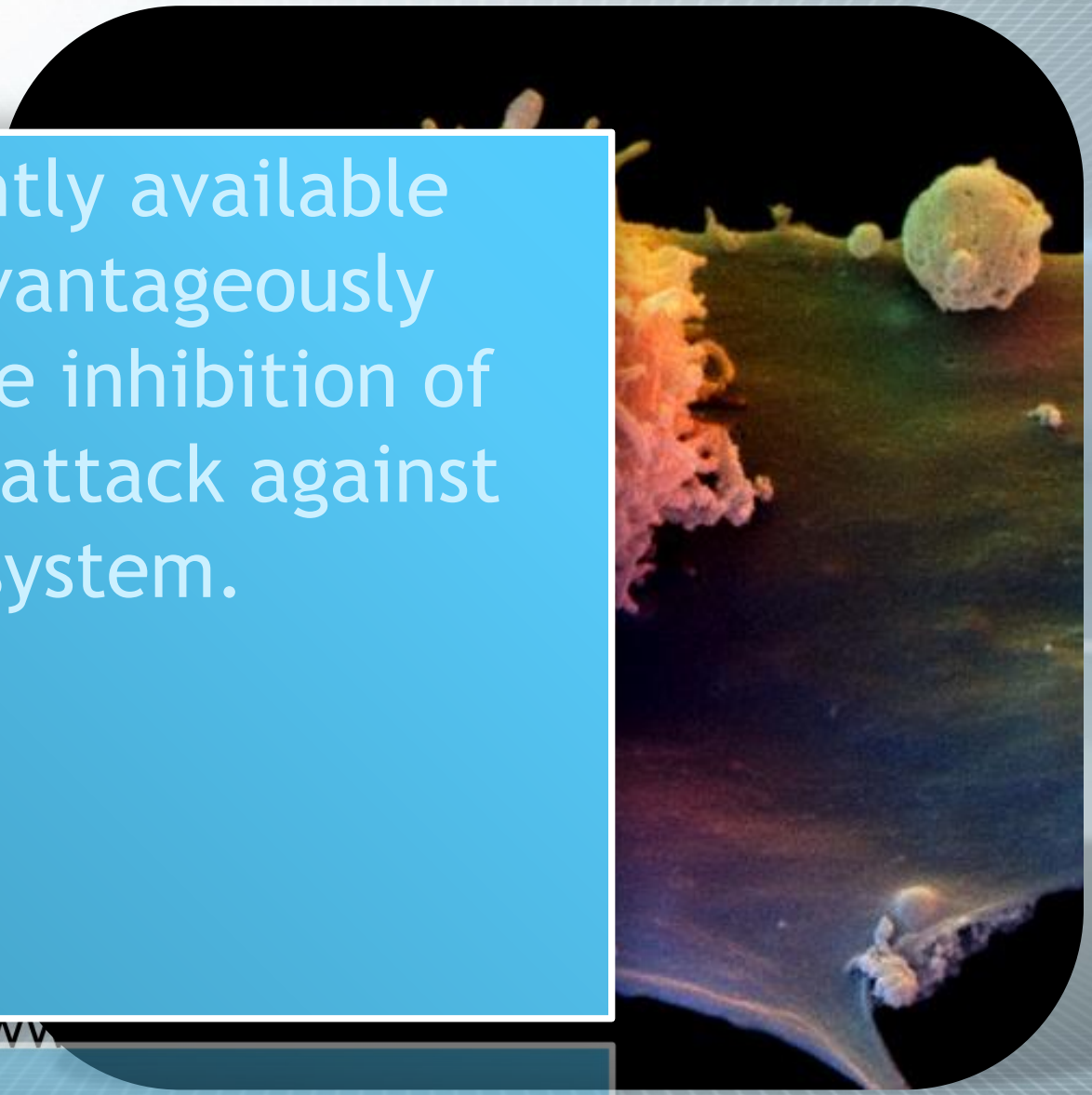
THE PROBLEM OF MULTIPLE

Of the currently available therapies advantageously used selective inhibition of autoimmune attack against the nervous system.



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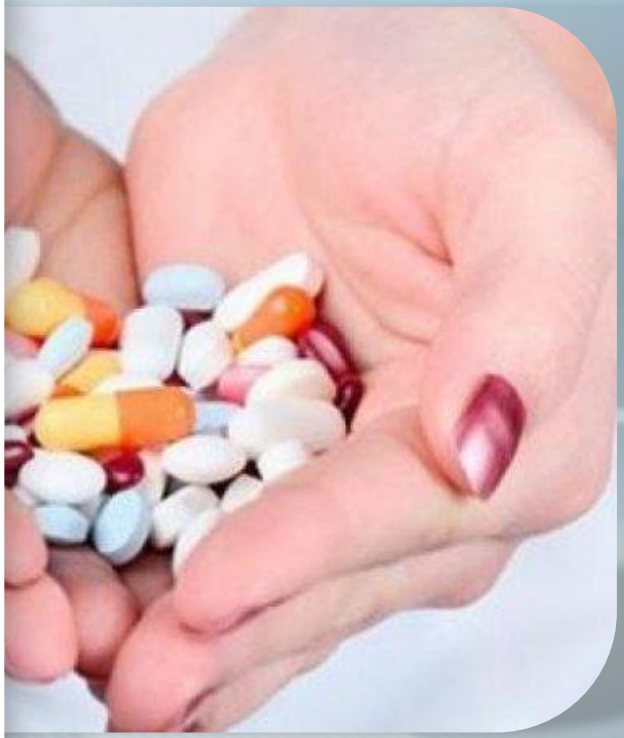
THE PROBLEM OF MULTIPLE

Used interferons, glucocorticoid hormones, various immunosuppressants including plasmapheresis. However, their use does not promote the regeneration of damaged myelin fibers previously



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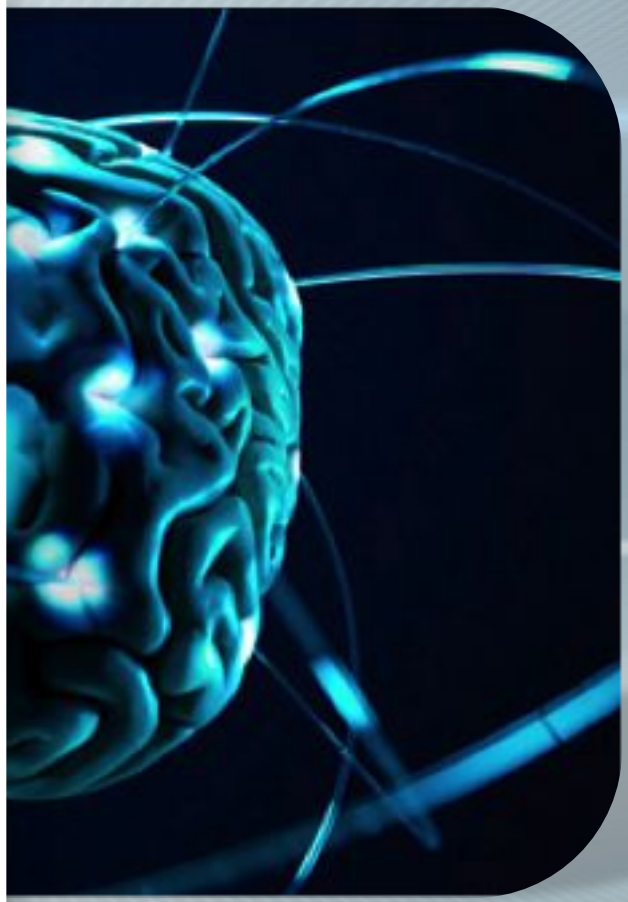
THE PROBLEM OF MULTIPLE

The therapy is aimed primarily improve lost function after CNS demyelinating attack, and to prevent new attacks.



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THE PROBLEM OF MULTIPLE

Despite that medicines used to treat MS are ineffective, and usually have significant side effects which have a negative impact.

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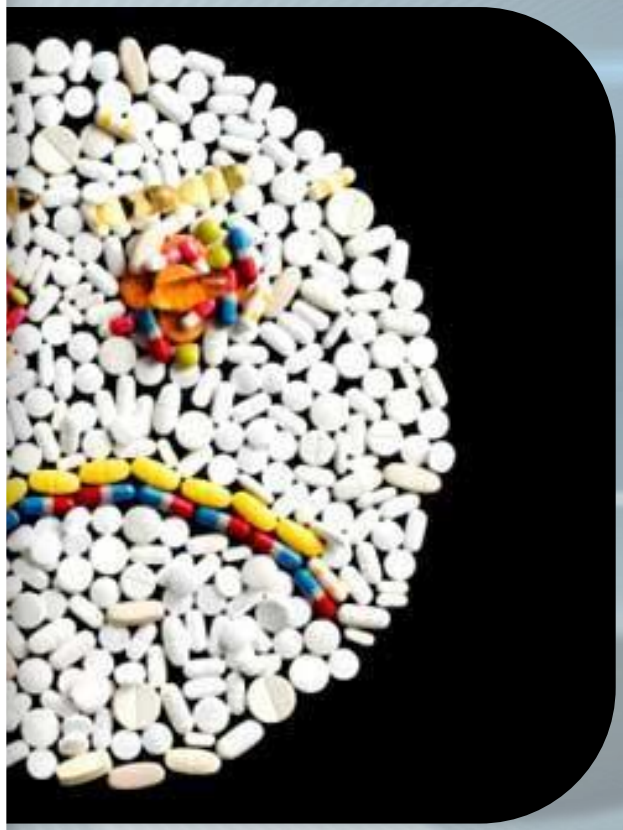
THE PROBLEM OF MULTIPLE

Poorly tolerated, and vice versa worsen the quality of life of patients.



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THE PROBLEM OF MULTIPLE

So many people suffer from MS often resort to alternative treatments, despite the lack of credible evidence.

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THE PROBLEM OF MULTIPLE

One of the most promising methods of treatment of multiple sclerosis is the use of stem cells.

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THE PROBLEM OF MULTIPLE

Studies on the use in the treatment of MS autologous stem cells show a positive therapeutic effect.

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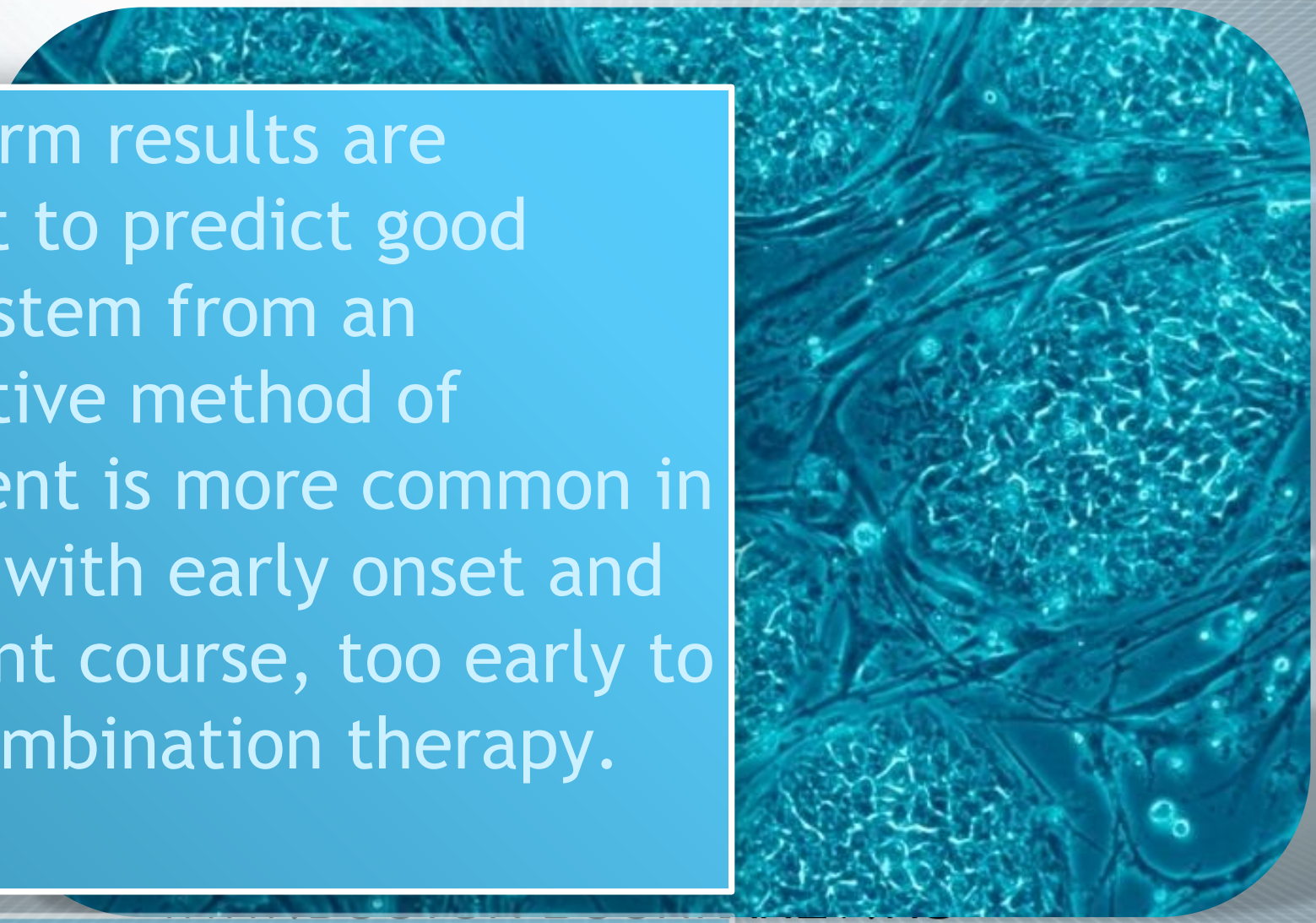
THE PROBLEM OF MULTIPLE

Long-term results are difficult to predict good results stem from an alternative method of treatment is more common in women with early onset and recurrent course, too early to start combination therapy.



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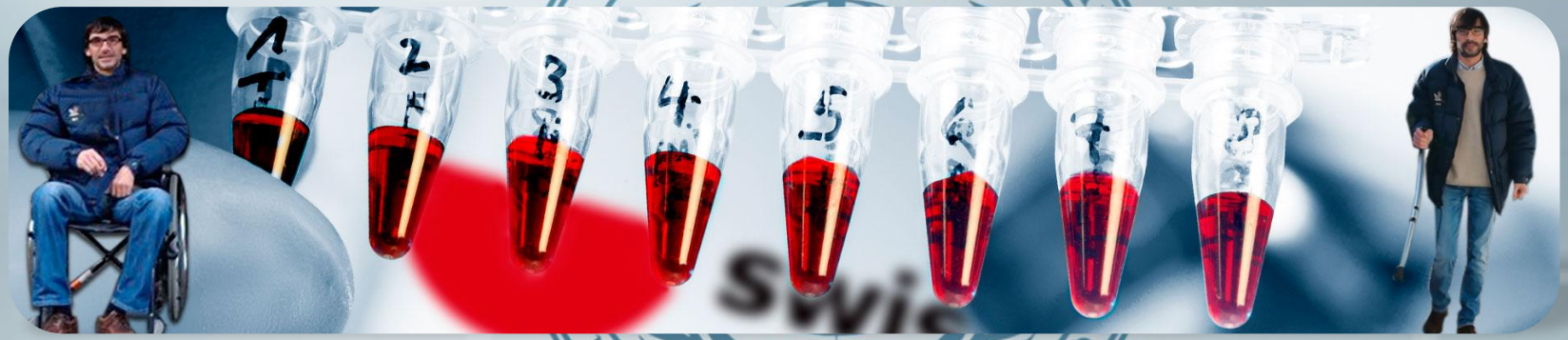

STEM CELL TREATMENT

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Treatment in Swiss Medica Clinic showed that stromal stem cells administered intravenously cross the blood brain barrier and copy neural stem cell activity.

[Park and Eve, 2009; Galli etc., 2008; Srivastava etc., 2008].

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THE PROBLEM OF MULTIPLE

This stem cell treatment leads to the replacement of damaged cells and the **restoration** of the **brain function**. “In fact, a growing number of reports indicate that adult stem cells have the ability to stimulate the generation of new neurons, oligo-dendrocytes, and astrocytes” [Park and Eve, 2009; Galli etc., 2008; Srivastava etc., 2008].

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THE PROBLEM OF MULTIPLE

Until recently, it was believed that damaged brain tissue is permanent condition. Nowadays, the re-growth of brain cells and improvements of neurological function has been documented.

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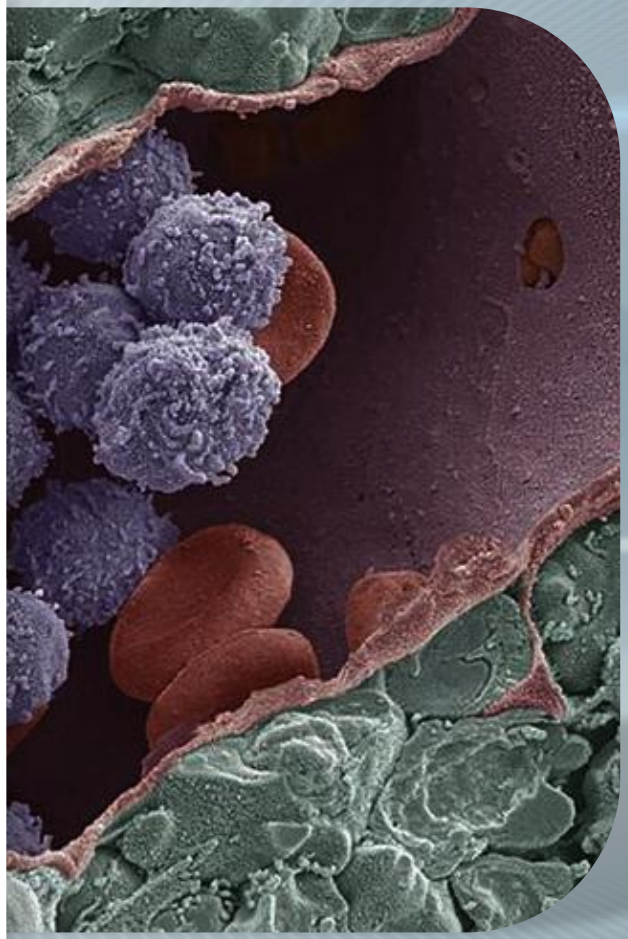
THE PROBLEM OF MULTIPLE

Swiss Medica Clinic has developed the Adult Autologous Stem Cell Therapy program to treat a variety of conditions, including multiple sclerosis, cerebral palsy, muscular dystrophy, stroke, amyotrophic lateral sclerosis and traumatic brain injury, etc.



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THE PROBLEM OF MULTIPLE

During stem cell treatment a patient receives 200 – 300 million stem cells. This quantity of the restored plain cells not only covers daily losses, but exceeds them thousands of times.

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THE PROBLEM OF MULTIPLE

Thus the reserve of the stem cells, almost lost for the latest 15 - 20 years, is restored. Naturally, after repl... bec... rene... active cells replace the old and damaged ones.

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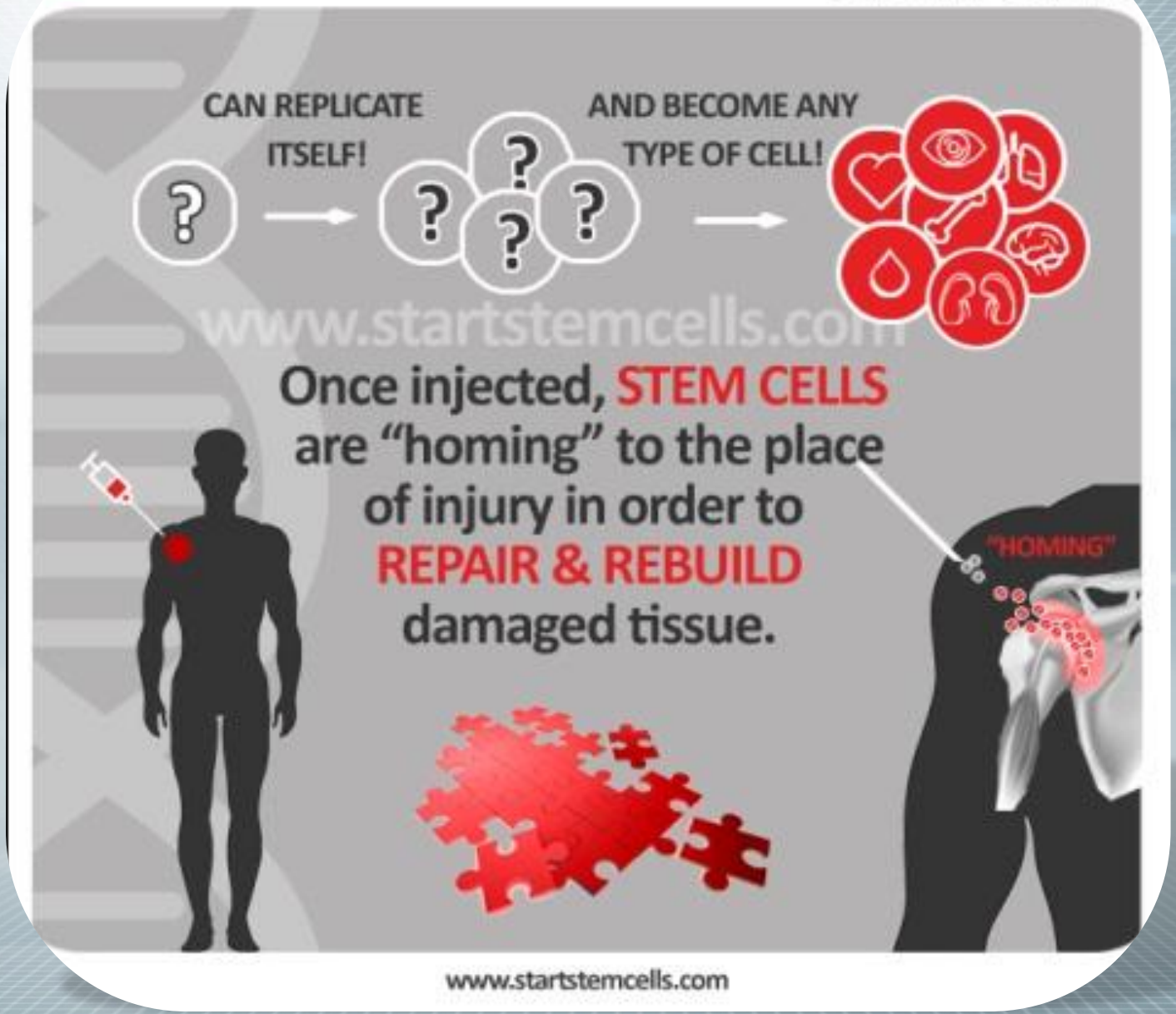
STEM CELLS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Once injected, STEM CELLS are "homing" to the place of injury in order to REPAIR & REBUILD damaged tissue.
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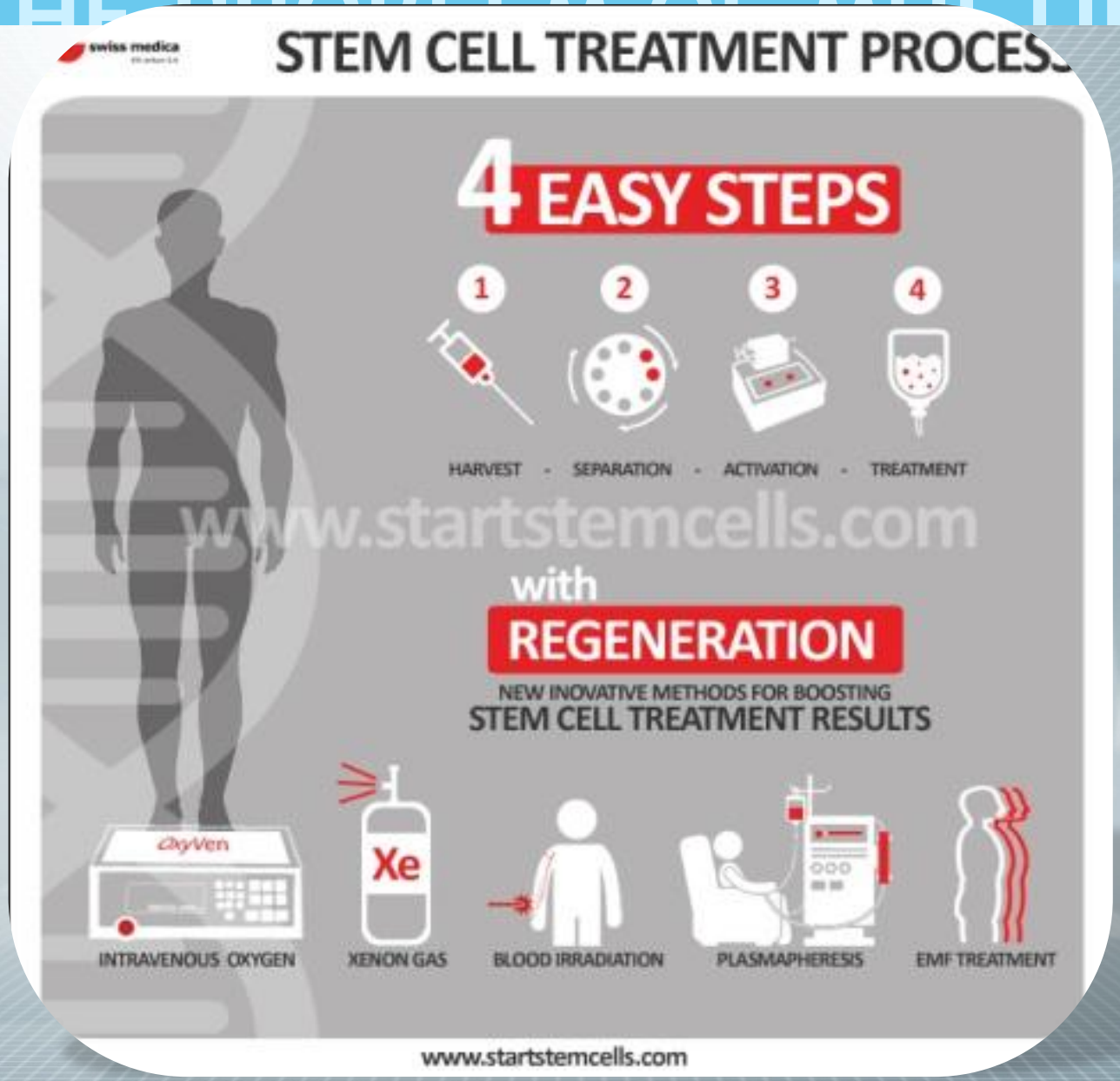
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THE PROBLEM OF MULTIPLE

The goal of this MS Cumulative report is to assess the success of Stem cells treatment in multiple sclerosis patients at Swiss Medica treatment center.

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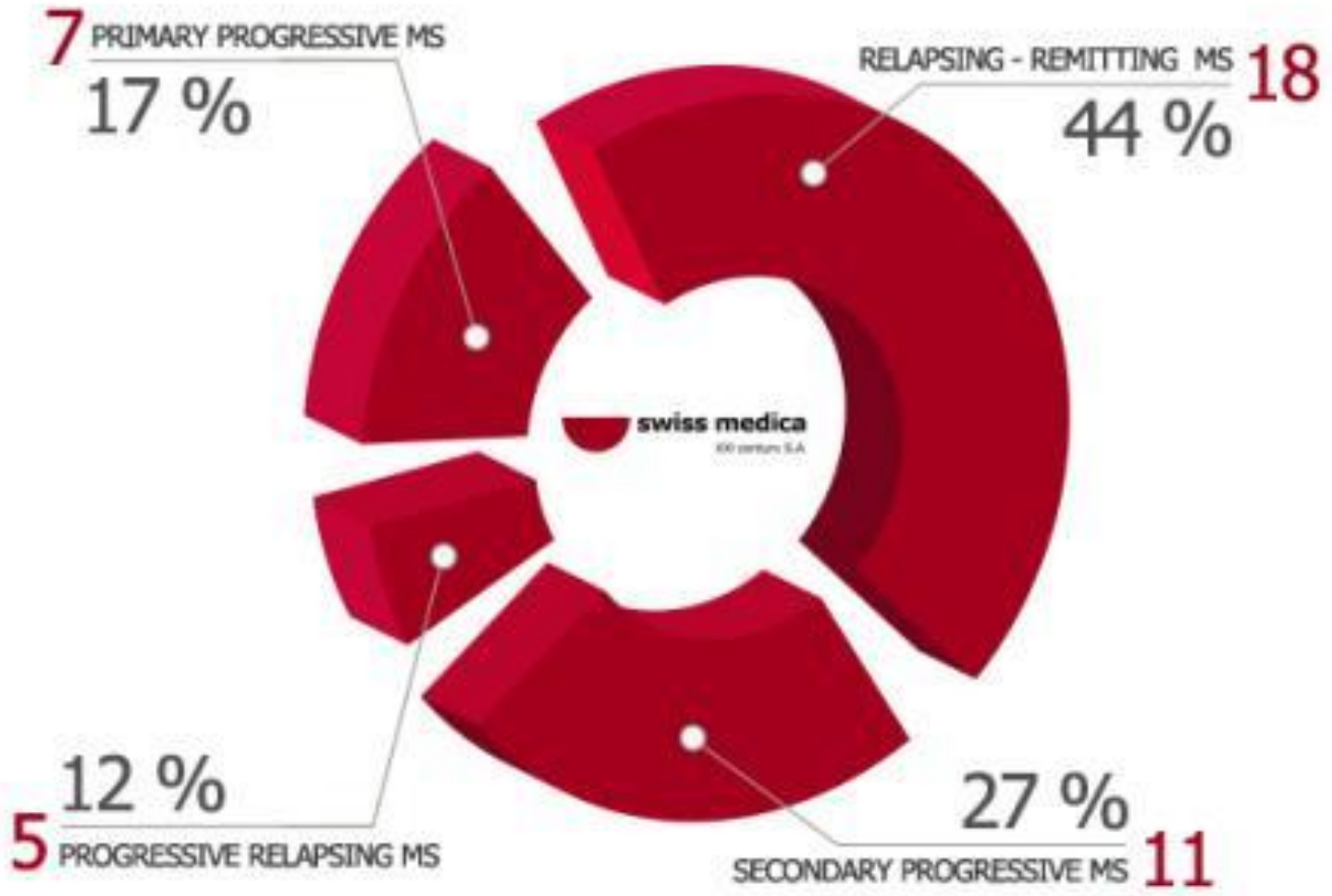

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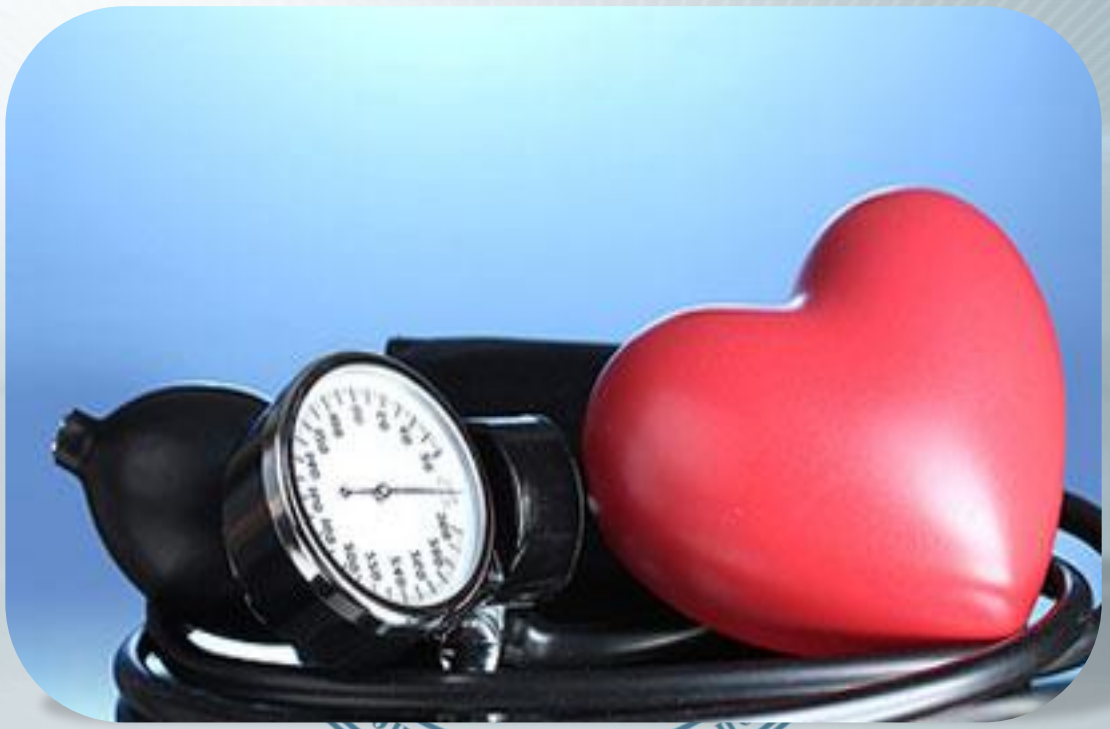

Cheers 😊

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THANK YOU ☺️

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M.Sc. PhD MD Bochkarev IA

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