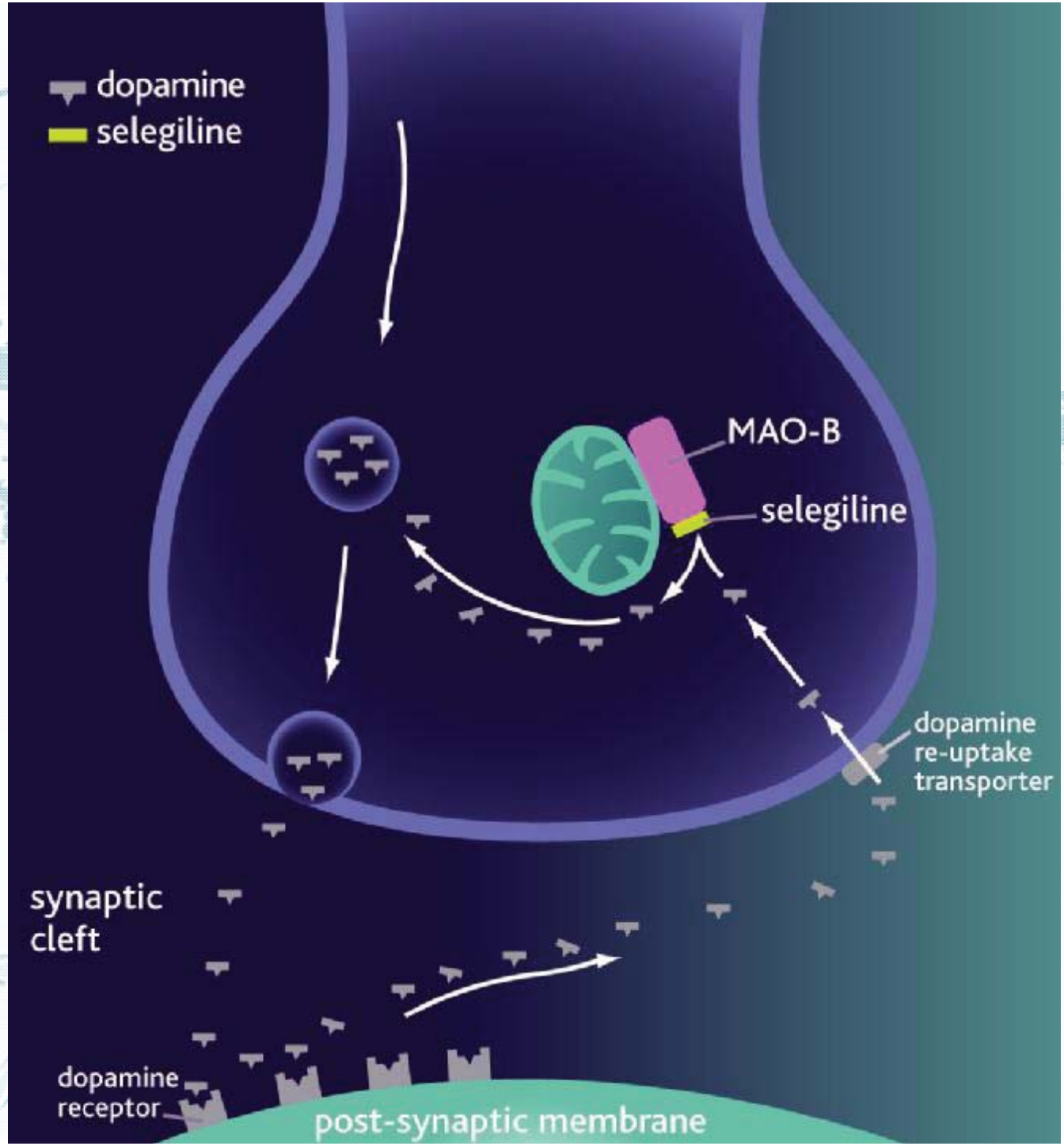
D2-Agonists

- Useful in addressing the ON-OFF phenomenon of L-dopa.
- Subcutaneous injection of dopamine provides a small amount of dopamine throughout the day and helps to counter the fluctuation in motor symptoms.

MAO-B Inhibitors

- MAO-B inhibitors work by blocking the enzyme MAO-B which is responsible for normally breaking down dopamine after it has been used.
- Hence MAO-B inhibitors increase dopamine levels and in theory, should alleviate the symptoms of Parkinson's disease.

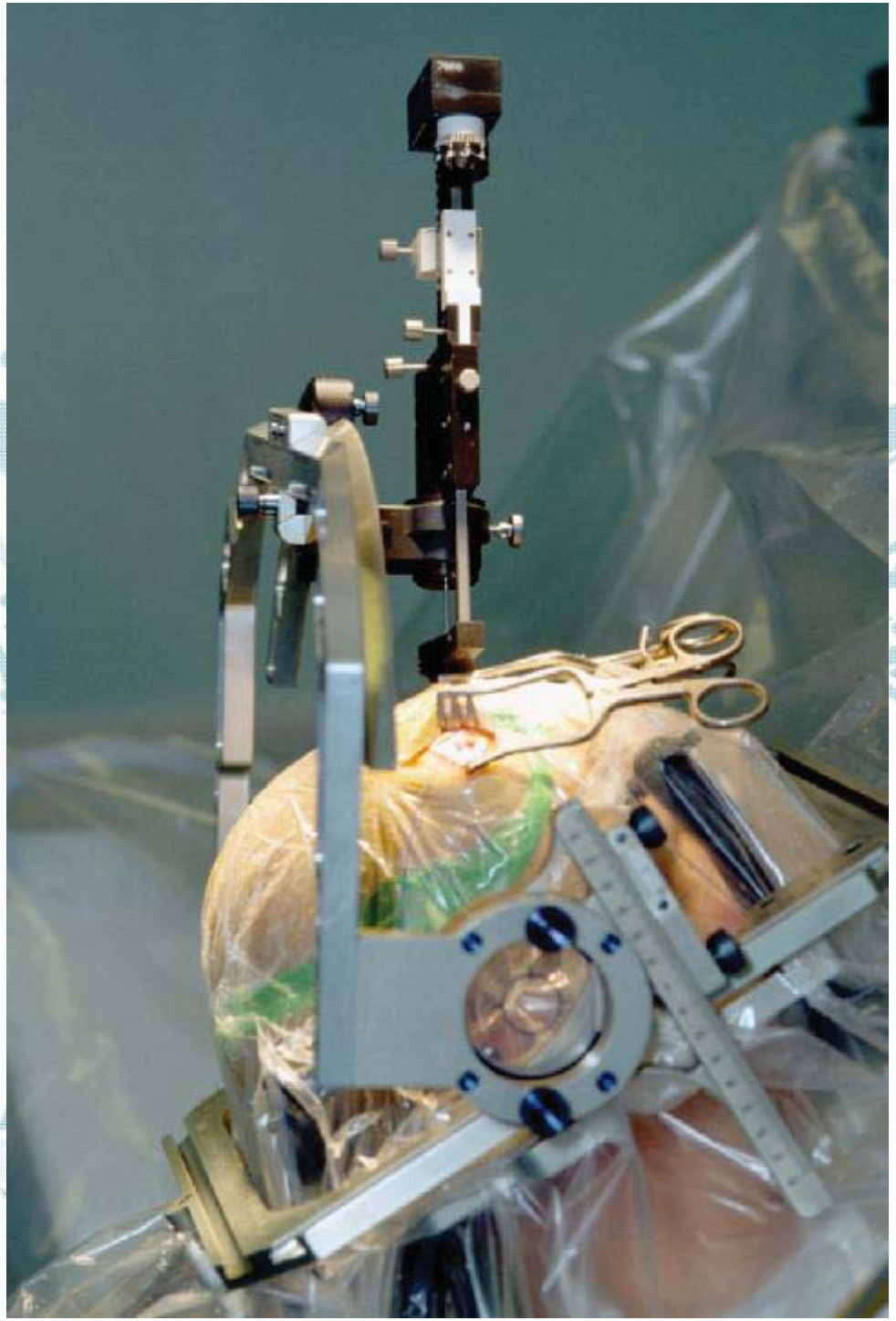

dopamine
selegiline
MAO-B
selegiline
dopamine
re-uptake
transporter
synaptic
cleft
dopamine
receptor
post-synaptic membrane

MAO-B Inhibitors

- However, MAO-B inhibitors cause a lot of problems.
- The inhibitors are metabolized into L-amphetamine and L-methamphetamine and cause side effects such as insomnia.
- Stomatitis has been reported with the use of MAO-B inhibitors.
- Also some research has shown the drug segeline (MAO-B inhibitor) when combined with L-dopa causes increased mortality

Thalamotomy

- Rarely used nowadays
- Mainly used for people who suffer from tremors on one side of the body.
- Involves the injection of liquid nitrogen to destroy a part of the thalamus.



Pallidotomy

- It is a surgical process involving the globus pallidus of the basal ganglia.
- In advanced Parkinson's, the globus pallidus sends impulses that inhibit the muscle movement.
- Therefore, the main focus is to decrease the impulses and hence increase the muscle movement.

Pallidotomy

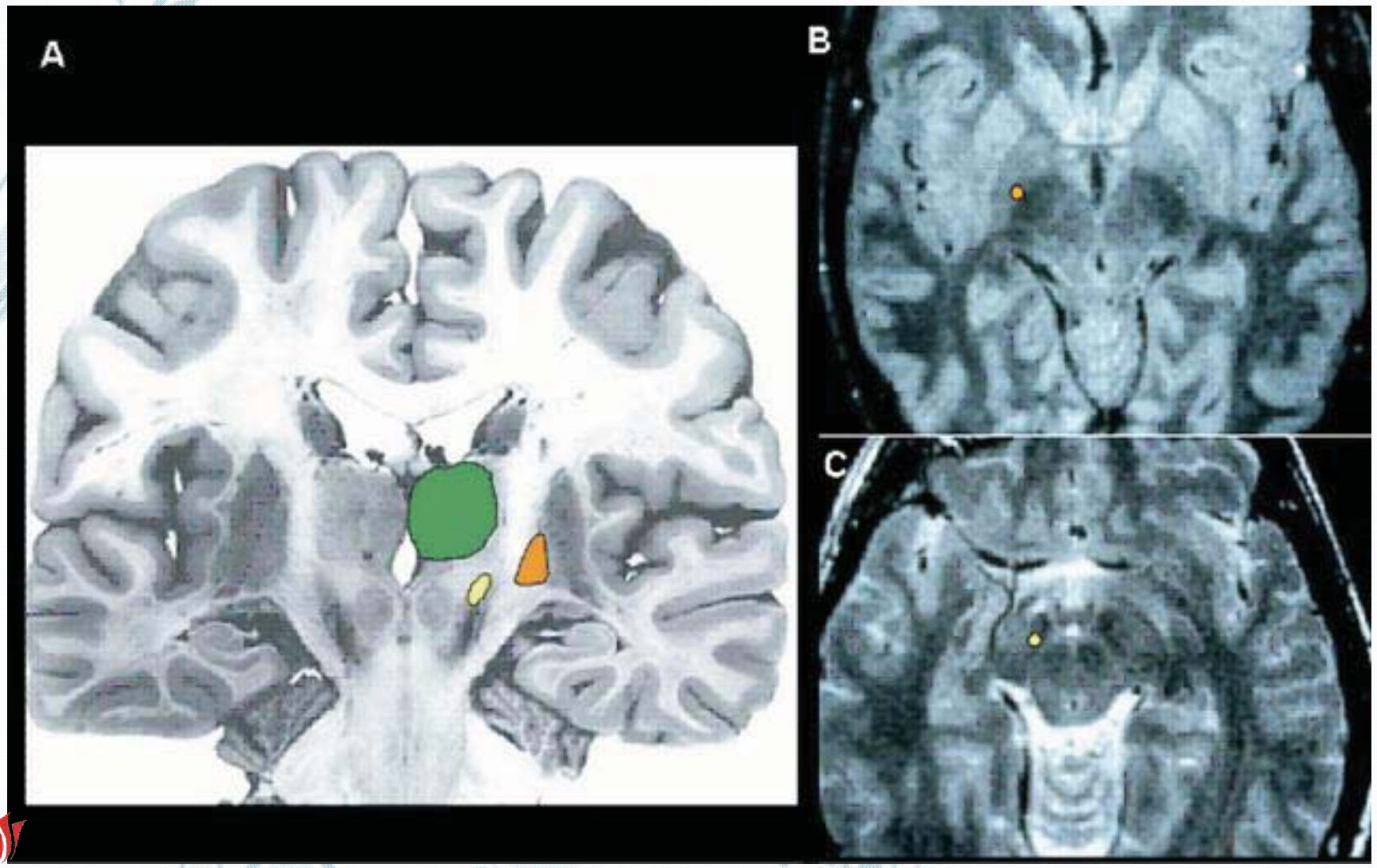
- Patient undergoes several imagery techniques to specify the exact location of the area to be operated.
- The procedure involves destroying a small part of the globus pallidus by leaving a scar.
- This results in a decrease in the impulses.

Pallidotomy: Special Points

- Not really useful in patients who are not responsive to medication such as L-dopa.
- Successful pallidotomy doesn’t mean that the patient doesn’t need to take drugs but it is also a symptomatic treatment.

Deep Brain Stimulation (DBS)

- This is the most prominently resorted trend in the treatment of Parkinsonism.
- It involves the insertion of electrodes into certain parts of the brain (namely the subthalamus and the globus pallidus interna).
- Then electric impulses are fired at the brain and that helps to mitigate the symptoms of PD

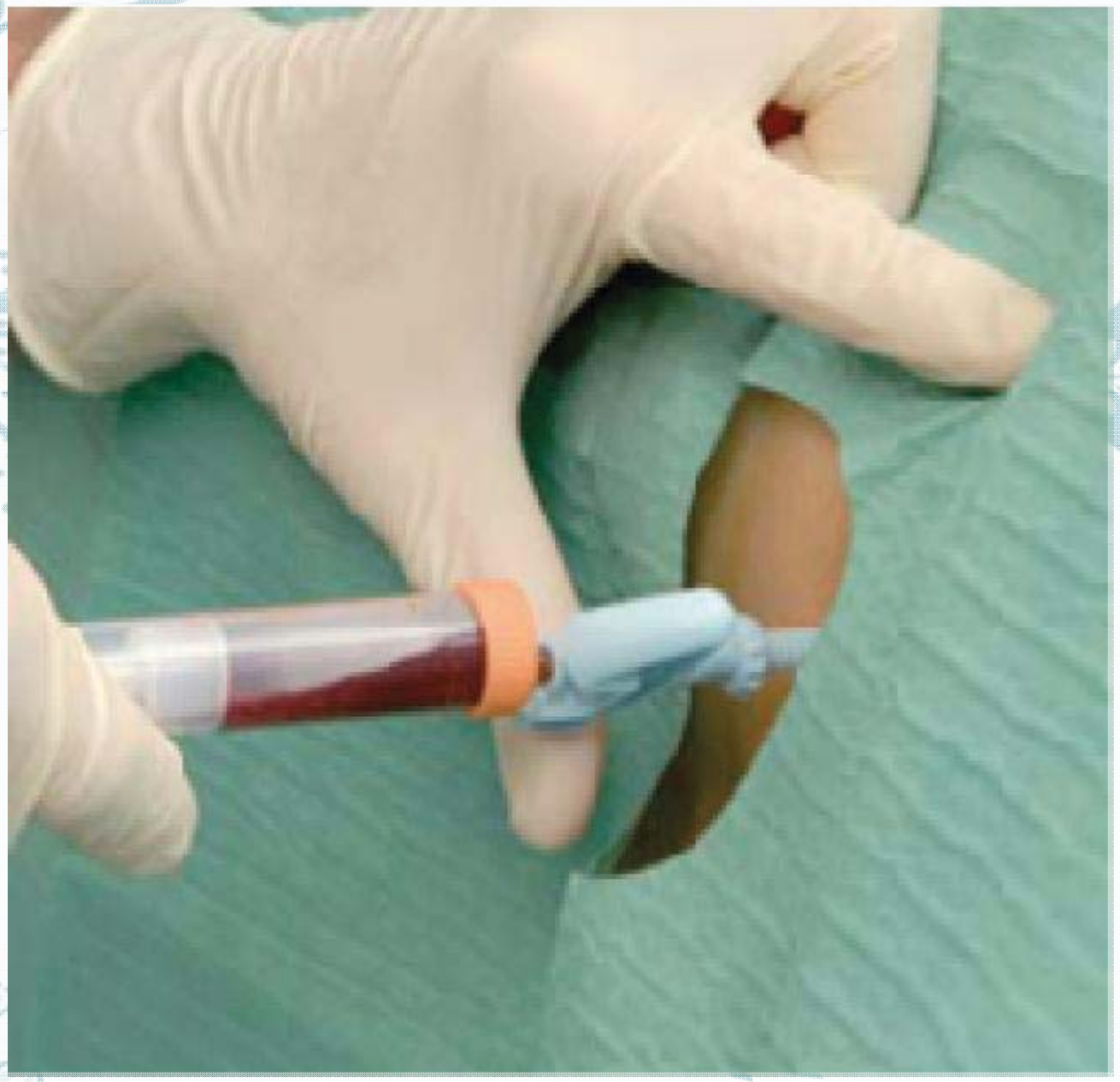

A
B
C

Deep Brain Stimulation (DBS)

- The mechanism of DBS is still largely unknown however various sub-mechanism are under research.
- DBS is a symptomatic treatment used for those patients who either don’t respond to traditional medication or are suffering from adverse effect of the drugs.

Stem Cells

- Currently being offered in numerous forms
- Utilizes multi-potent cells from the bone marrow.
- Administration is either through lumbar puncture or direct implantation



Stem Cells

- Shows promising results and is currently enjoying a great deal of research.
- Of the few patients treated with this method, over 90% have reported a significant improvement in their quality of life.

Fetal Stem Cells

- There has been a promising research showing that implanted fetal cells can stimulate re-innervation of the Parkinsonian striatum.
- Hopefully, this can open the door for a treatment of the disease, at long last.

Conclusions

- Parkinsonism really is a trap disease
- Although it is idiopathic there are predisposing factors
- Currently available treatments aim only at the symptoms and we are looking forward to treatment that actually treats the disease.

Thank You