

MISSIE BREIN

Een reis door je hoofd



Hier begint
de reis naar
je hersenen!

Ontdek hoe je ziet, hoort, voelt, denkt,
onthoudt en beweegt

voor groep 8 en de eerste jaren van het voortgezet onderwijs

Colofon

Titel

Missie Brein – een reis door je hoofd

Concept, tekst en vormgeving

Esther Poortier

Illustraties

Gemaakt met ondersteuning van AI en verder samengesteld en vormgegeven door Esther Poortier

Uitgave

Visueel met Esther

www.visueelmetesther.nl

Jaar van uitgave

2026

Doelgroep

Groep 8 van het basisonderwijs en de eerste jaren van het voortgezet onderwijs

Over deze uitgave

Missie Brein is een educatieve strip over de werking van het brein. De inhoud is gebaseerd op De Breingids – een reis door onze hersenen en waar nodig vereenvoudigd, aangevuld en geactualiseerd voor jonge lezers.

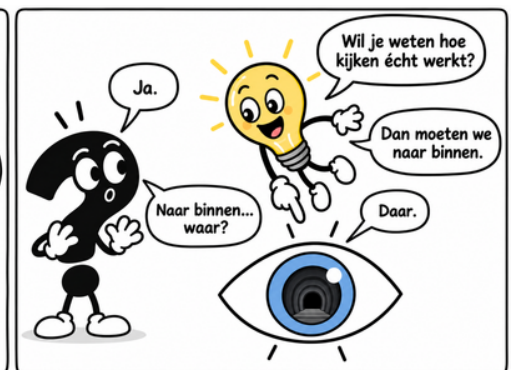
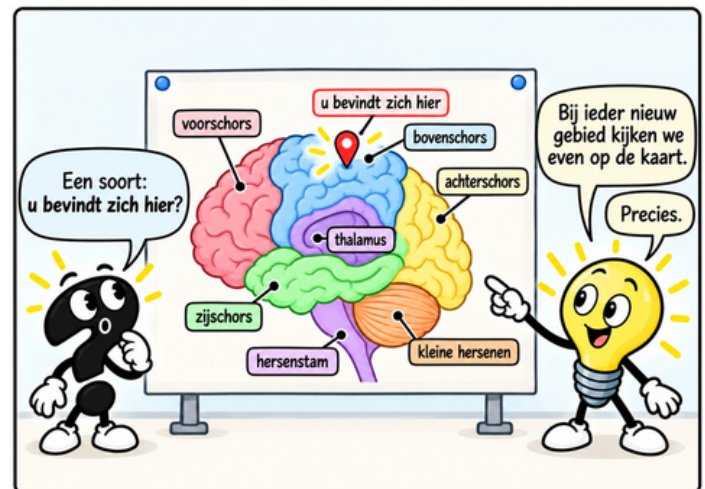
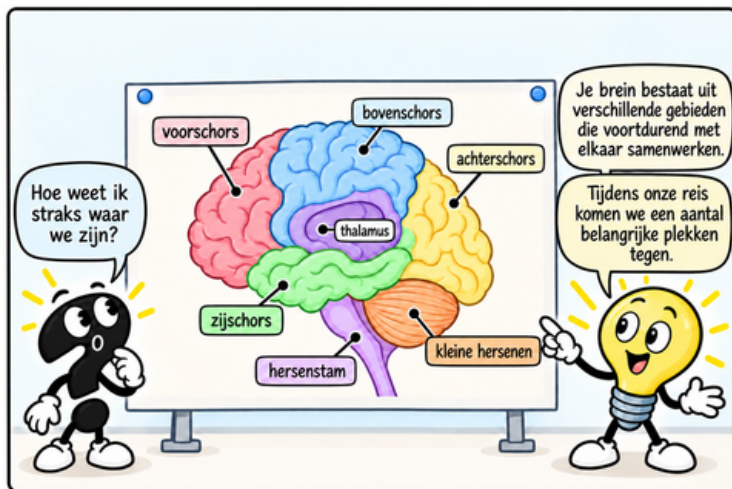
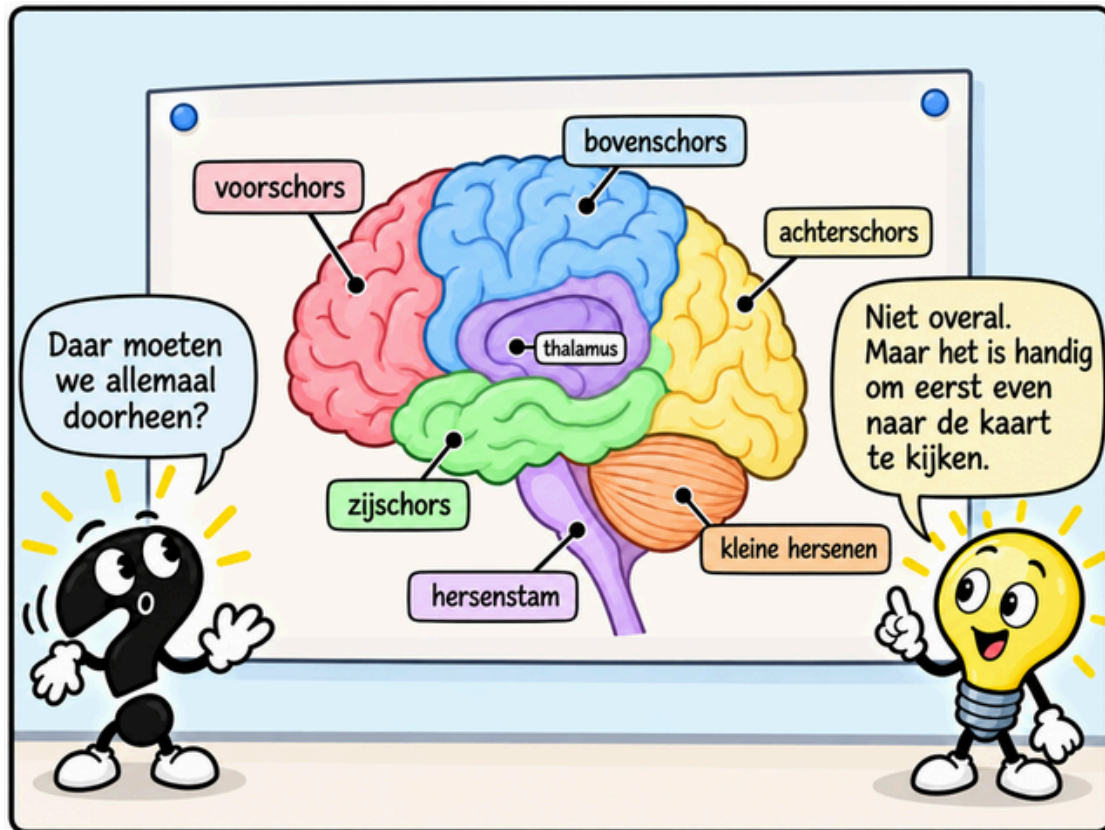
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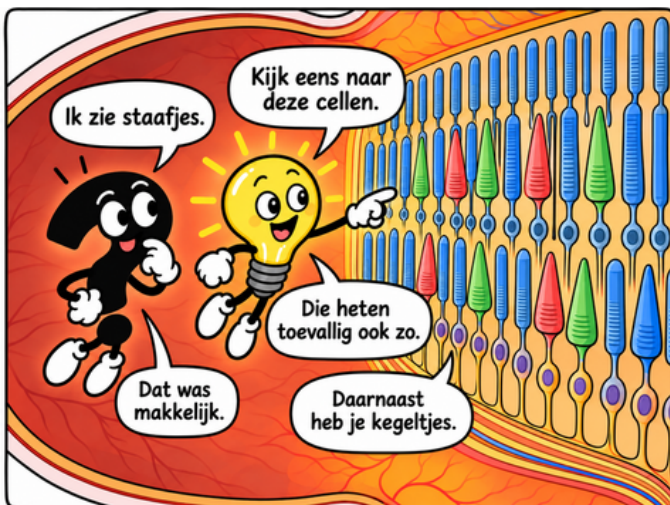
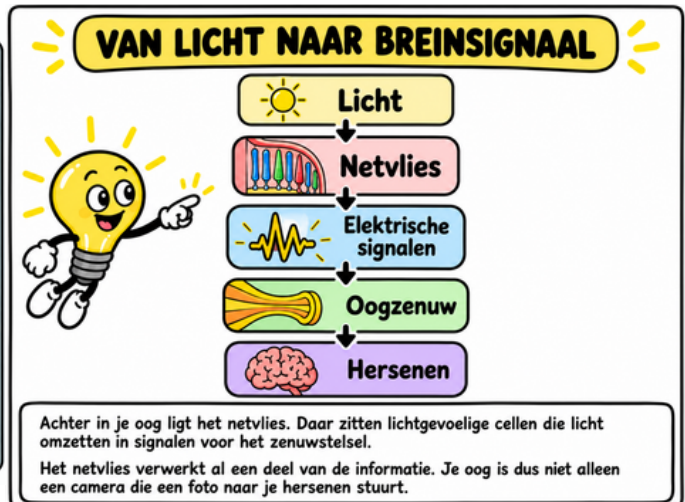
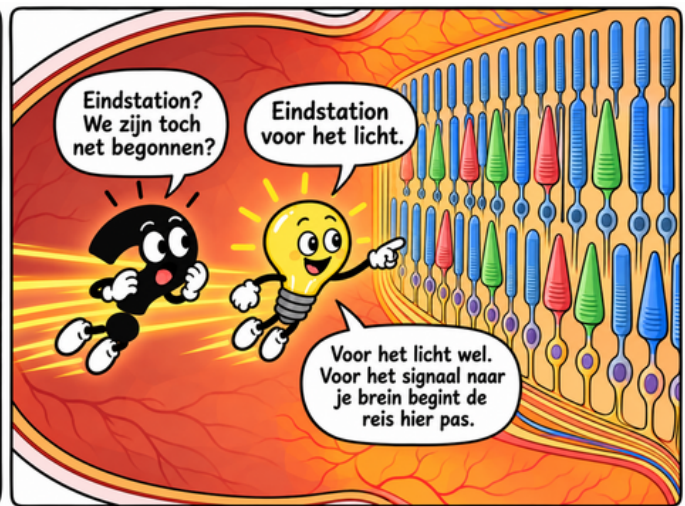
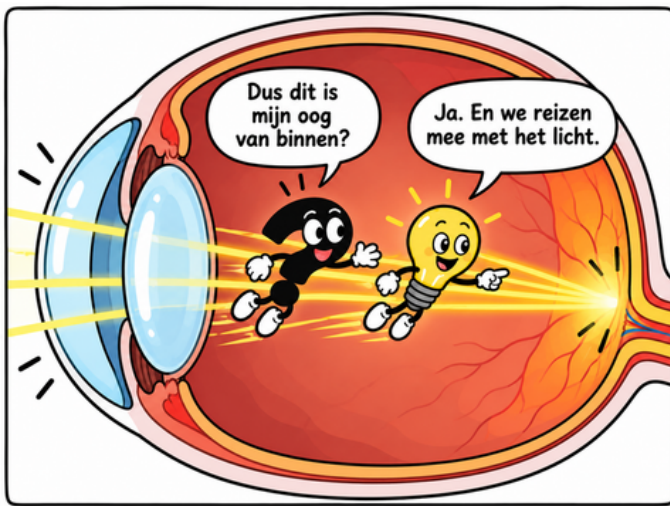
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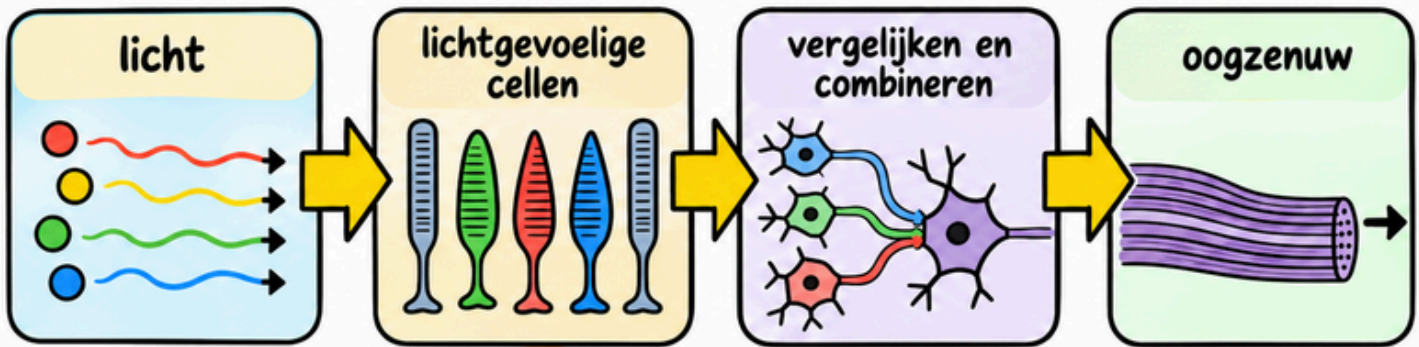
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Missie Brein – een reis door je hoofd





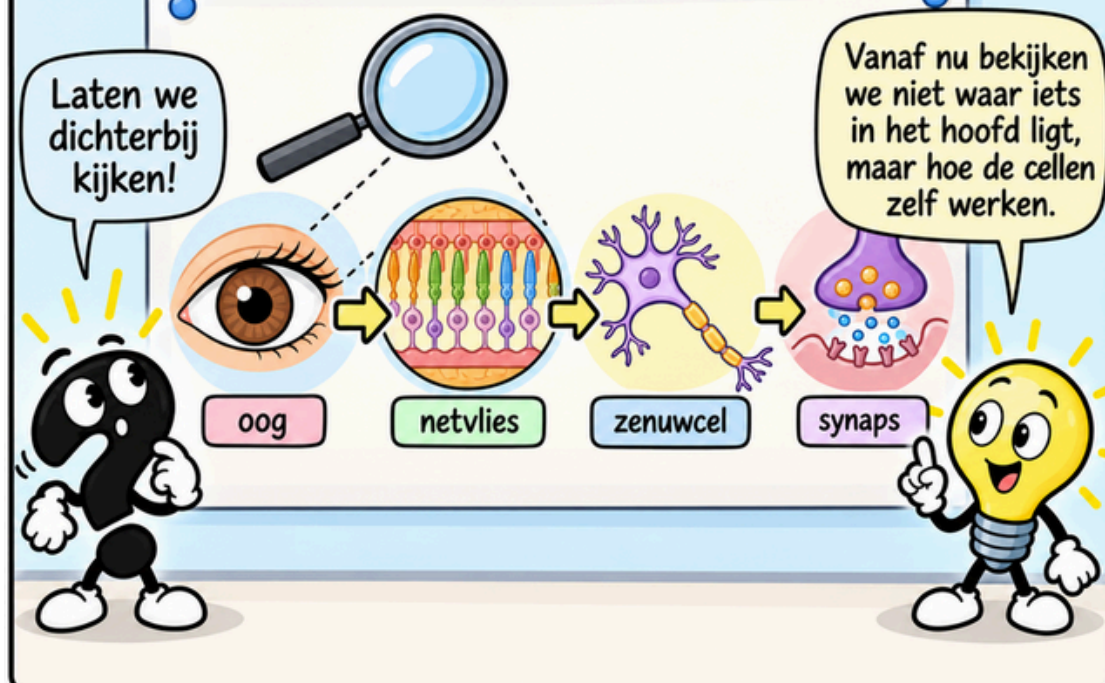
HET NETVLIES VERWERKT AL INFORMATIE



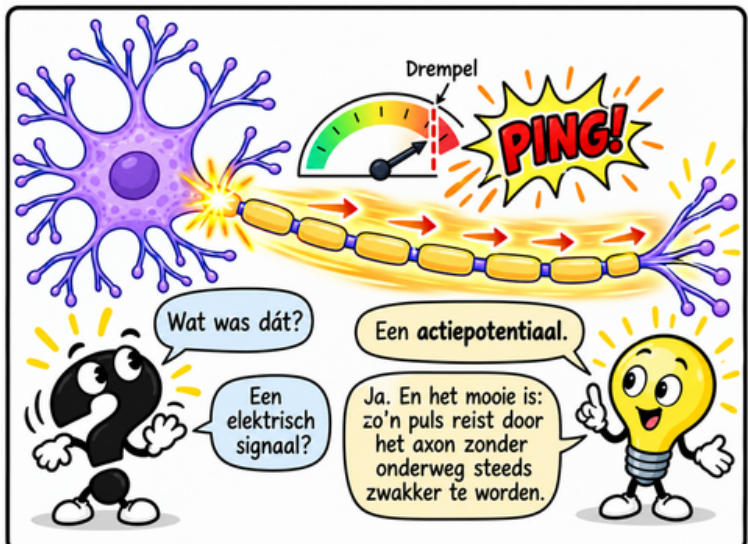
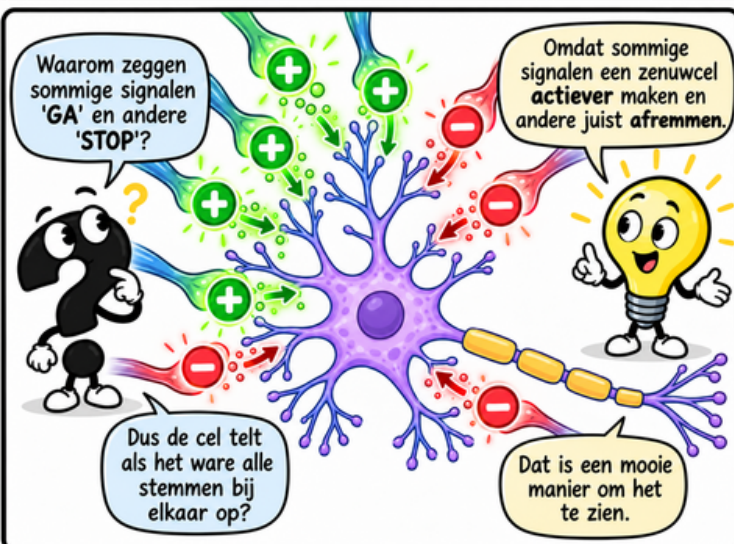
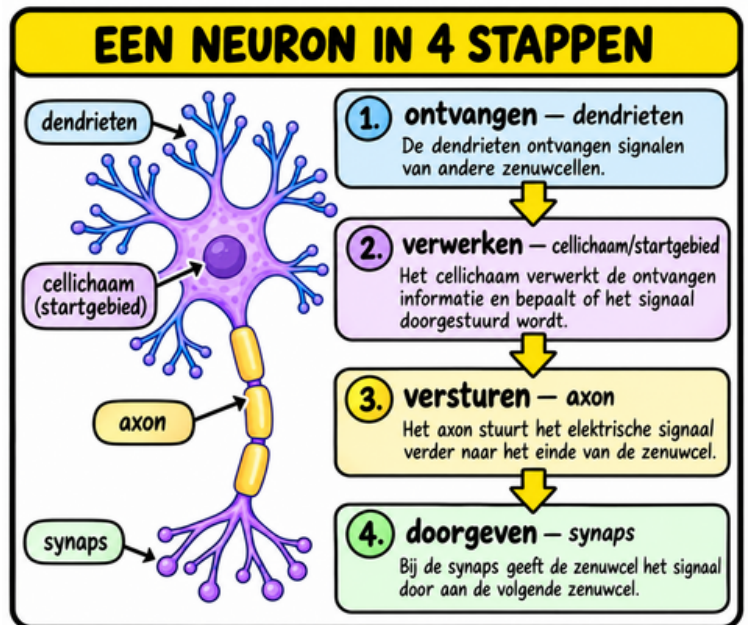
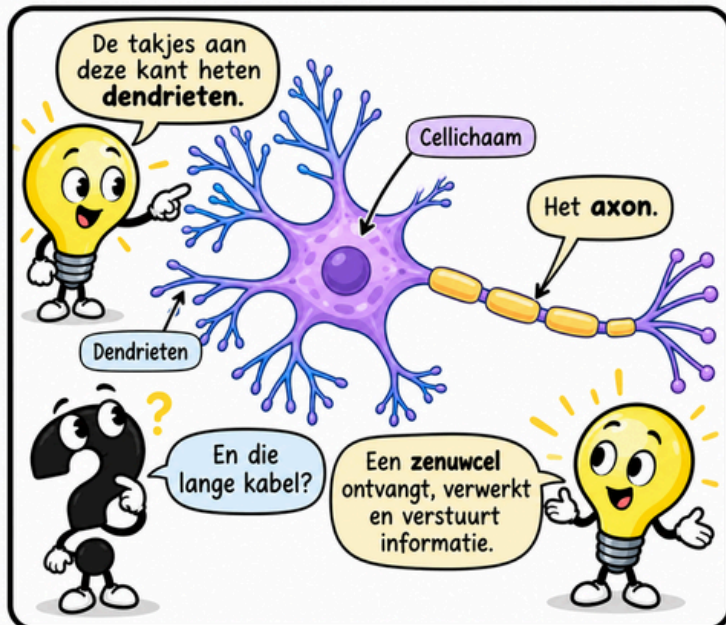
- Het netvlies stuurt niet van iedere lichtgevoelige cel zomaar een los bericht door.
- Zenuwcellen in het netvlies vergelijken signalen met elkaar. Zo kunnen bijvoorbeeld verschillen tussen lichte en donkere plekken en veranderingen in het beeld extra duidelijk worden.
- De informatie die via de oogzenuw naar de hersenen gaat, is daardoor al voorberekt.

WE ZOOMEN IN

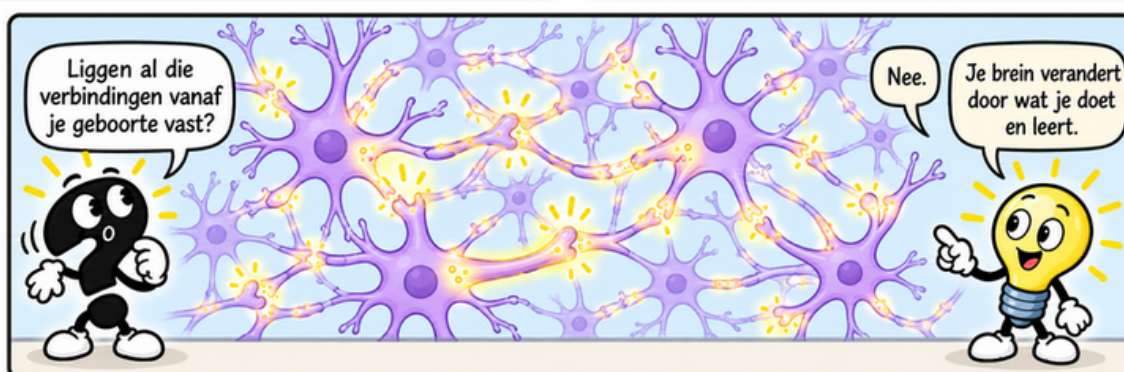
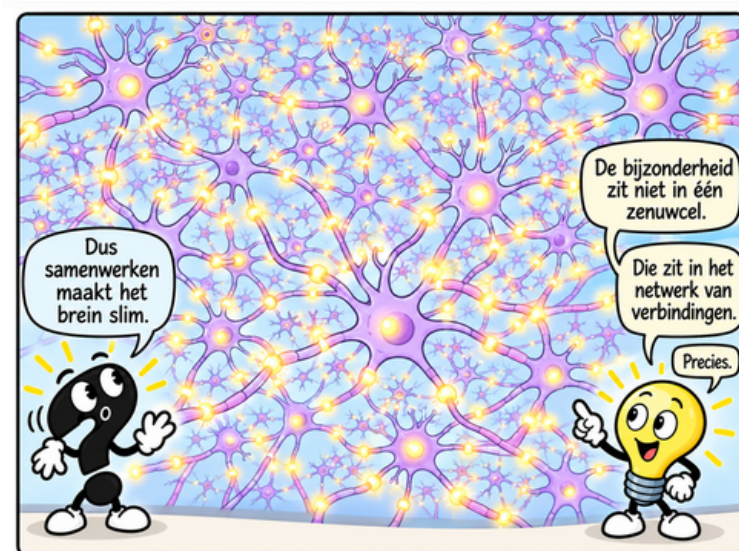
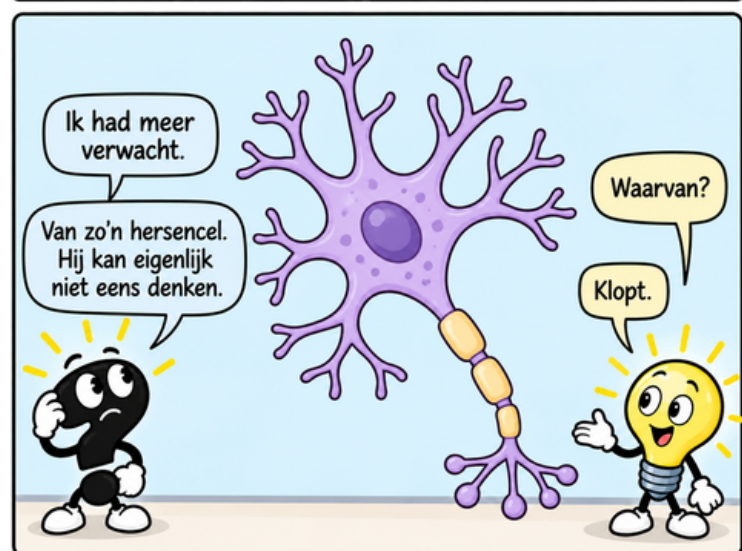
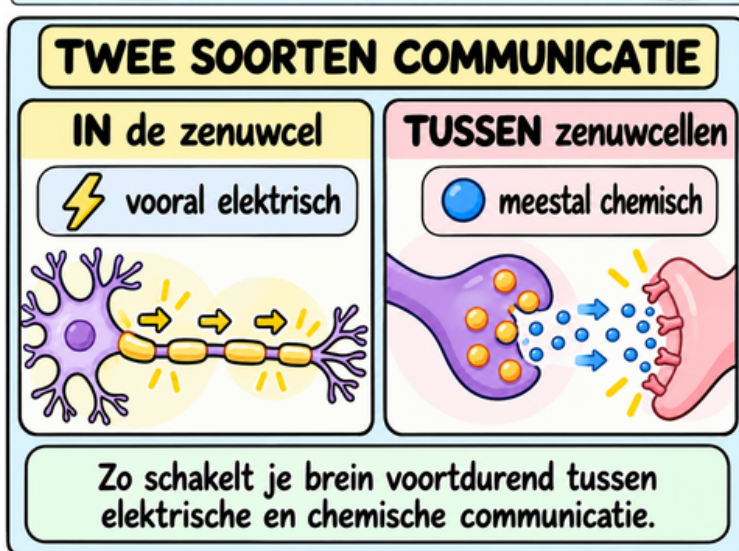
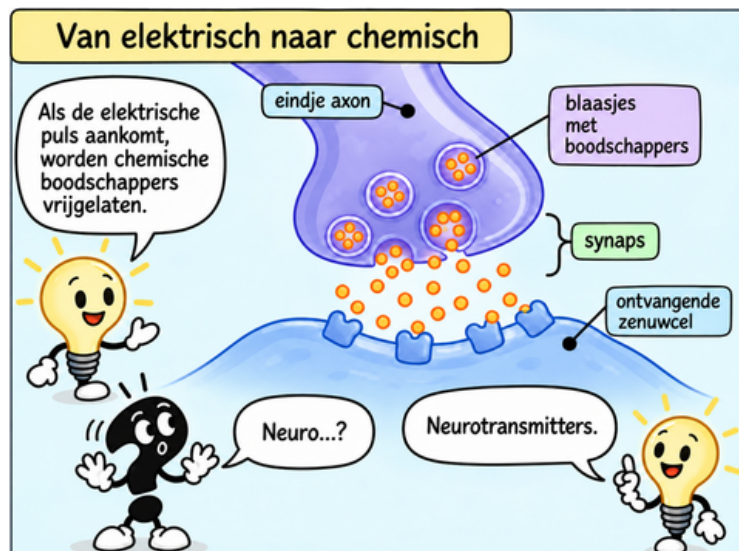
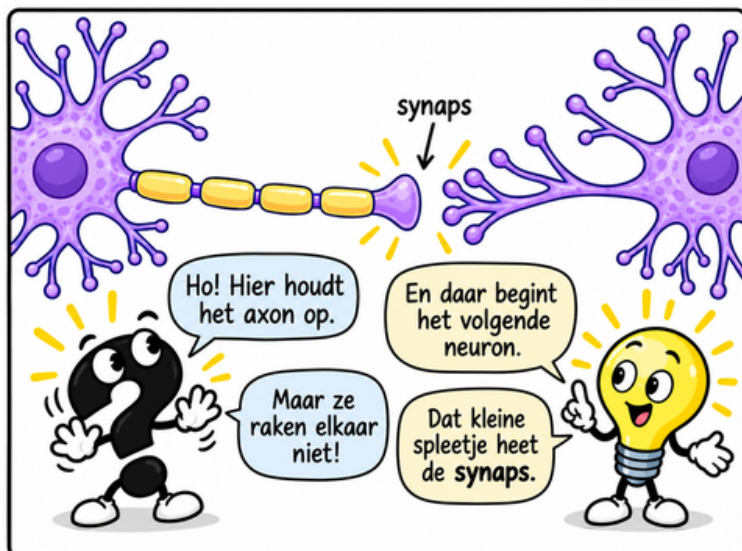
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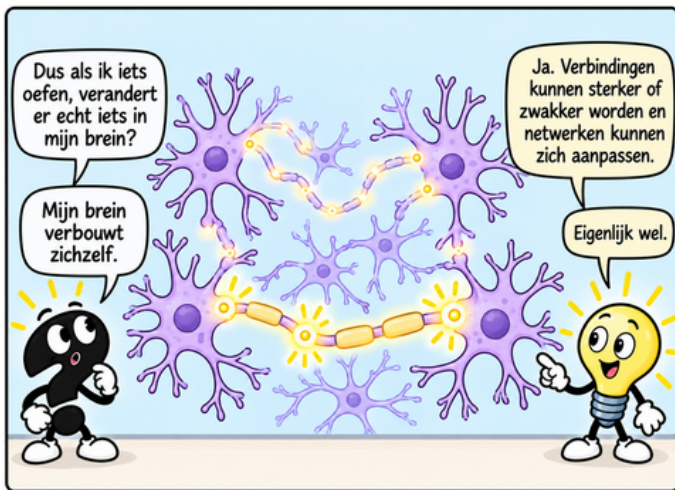


De zenuwcel



De synaps





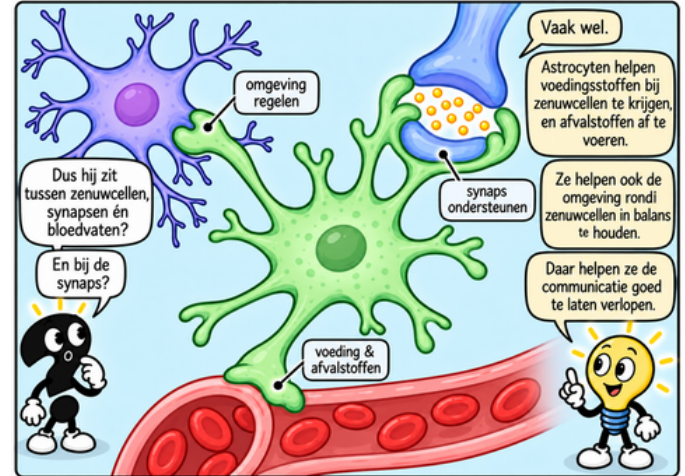
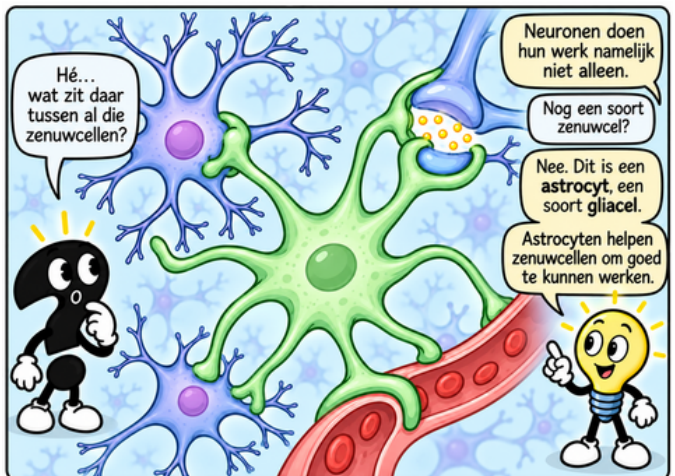
NEUROPLASTICITEIT

Het vermogen van het brein om door ervaring en leren te veranderen noemen we neuroplasticiteit.

Verbindingen kunnen veranderen, verdwijnen of ontstaan.

Daardoor kunnen hersennetwerken zich aanpassen.

Leren gaat samen met veranderingen in de verbindingen tussen zenuwcellen.

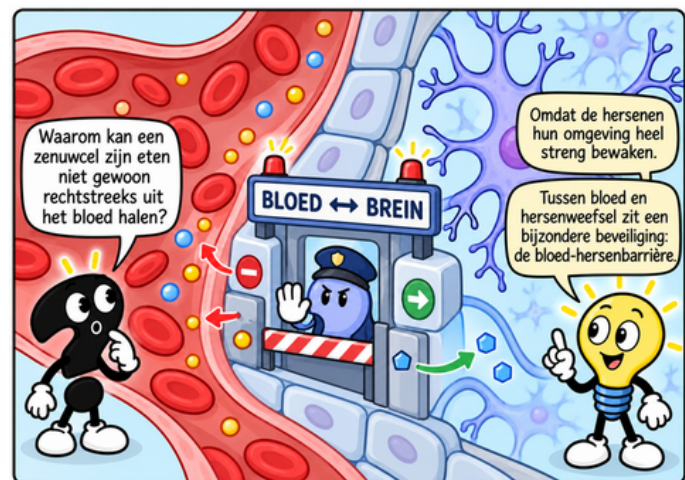


ASTROCYTEN

Astrocyten zijn **gliacellen**: cellen die neuronen ondersteunen.

Ze helpen onder andere bij:

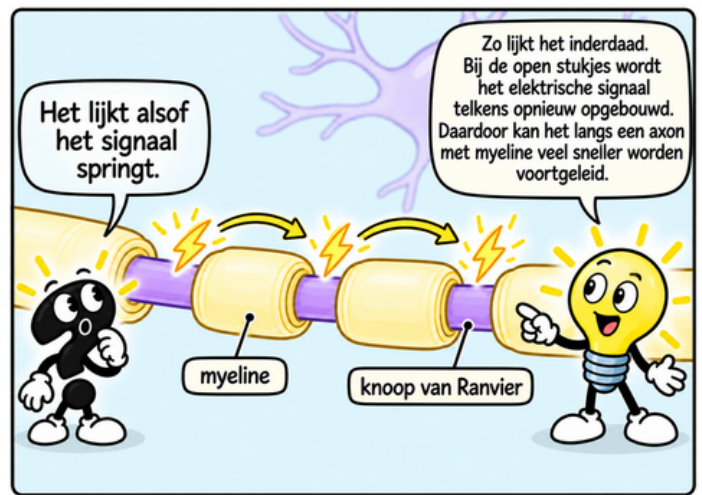
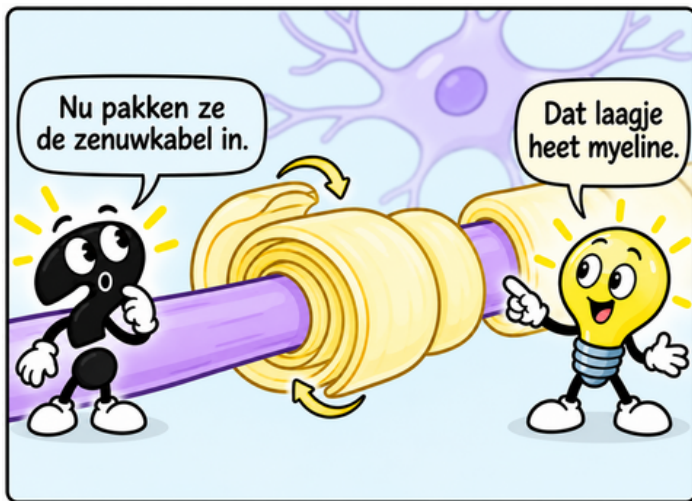
- voeding en afvalstoffen**
- het regelen van de omgeving rond zenuwcellen**
- ondersteuning van synapsen**



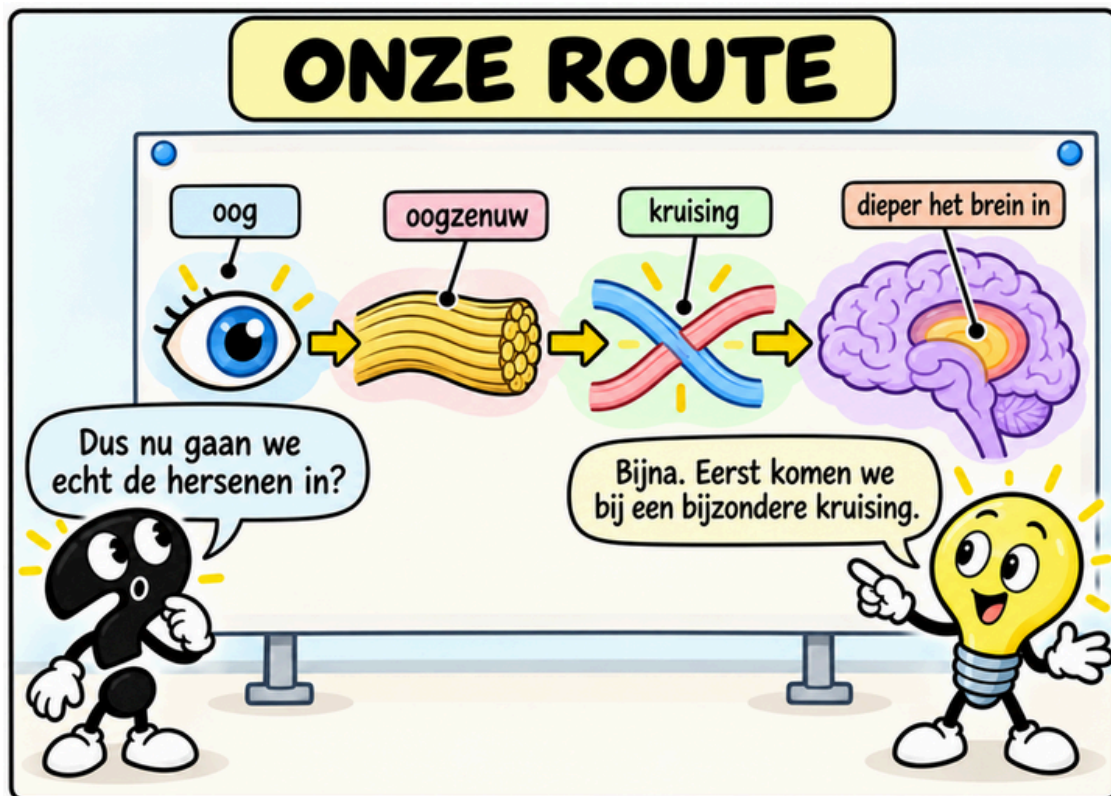
BLOED-HERSENBARRIÈRE

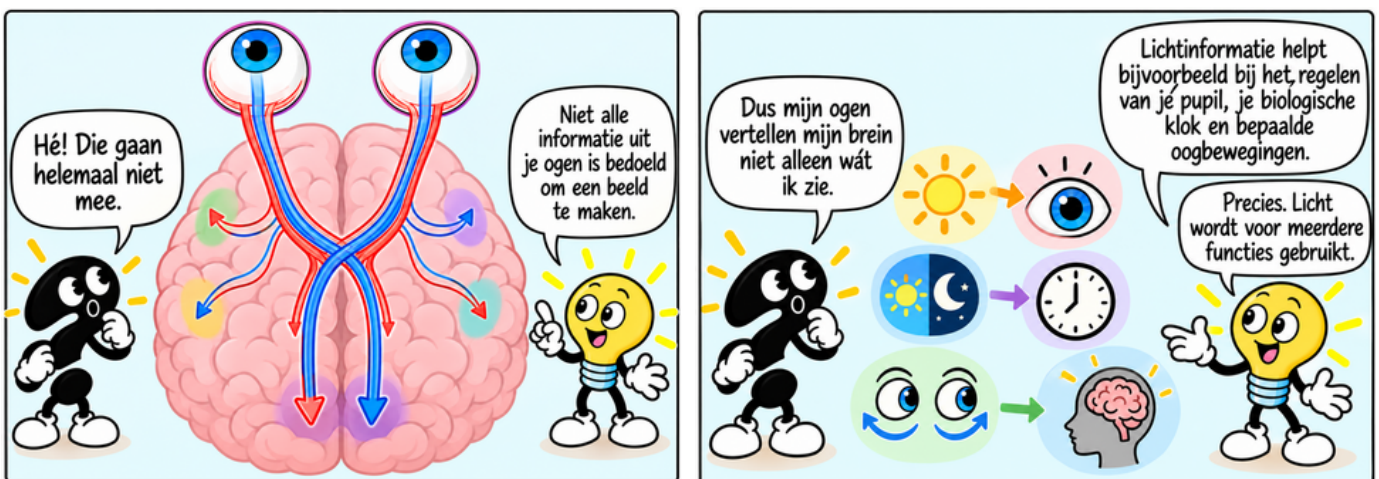
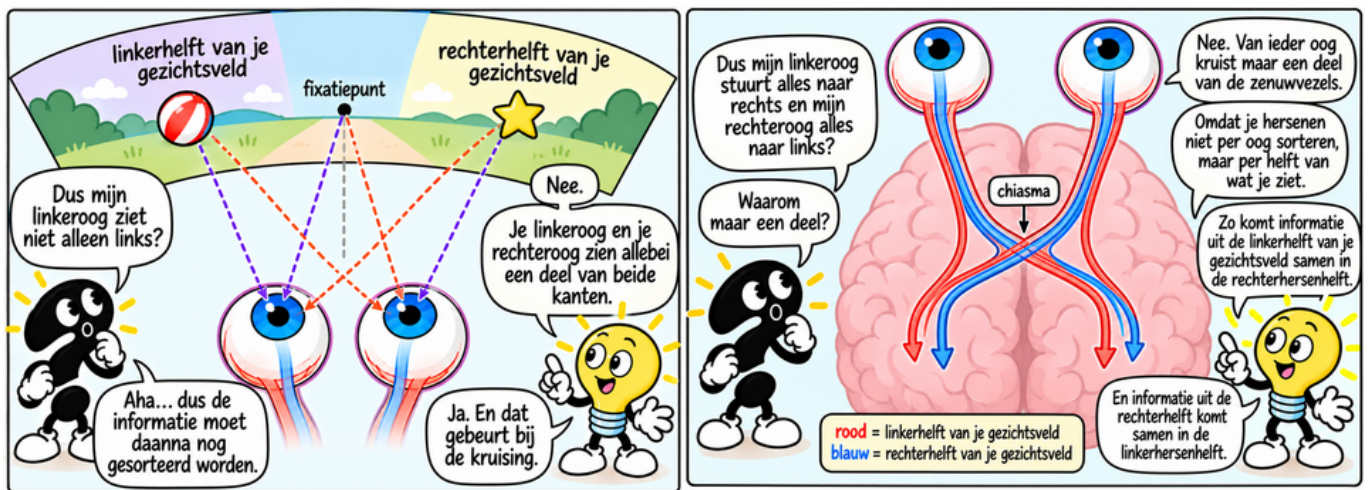
Niet iedere stof uit je bloed mag zomaar het hersenweefsel in.

De bloed-hersenbarrière helpt de chemische omgeving van het brein stabiel te houden.

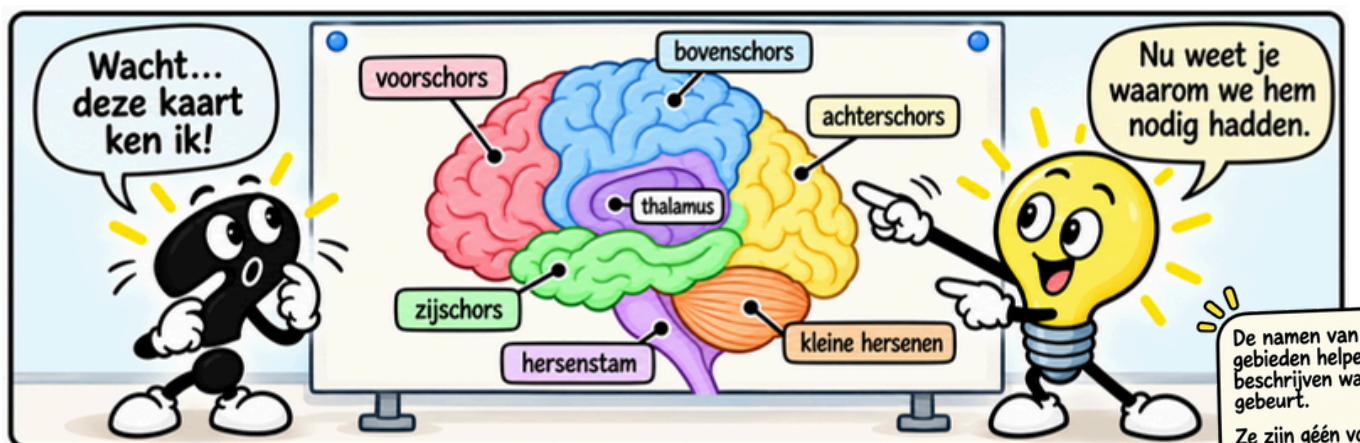
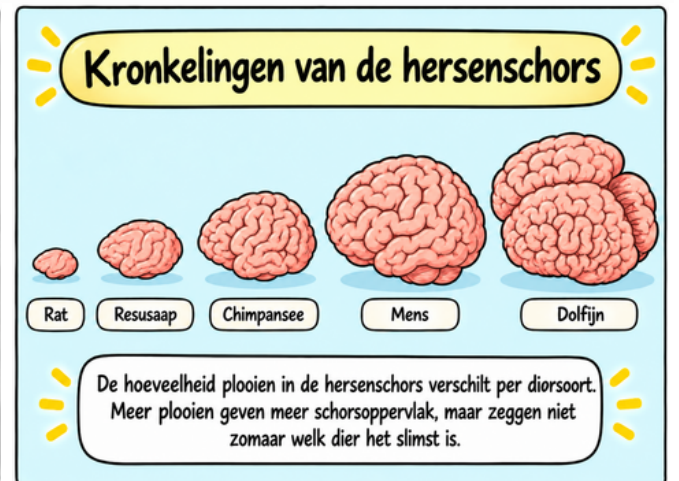
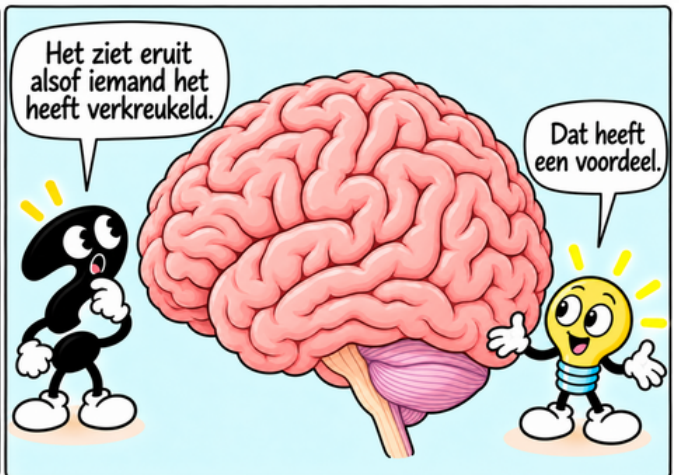
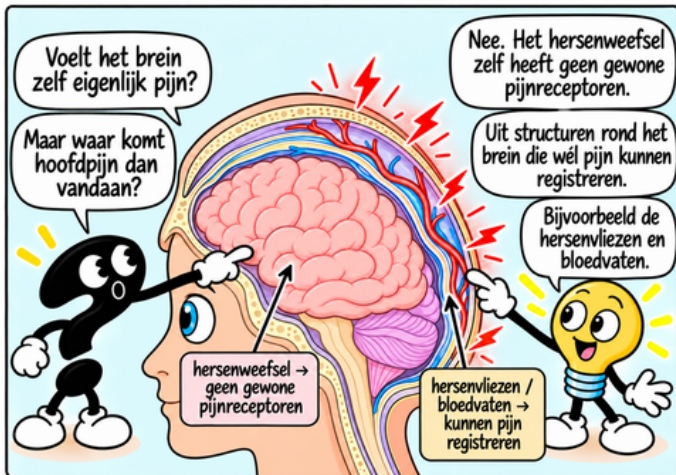
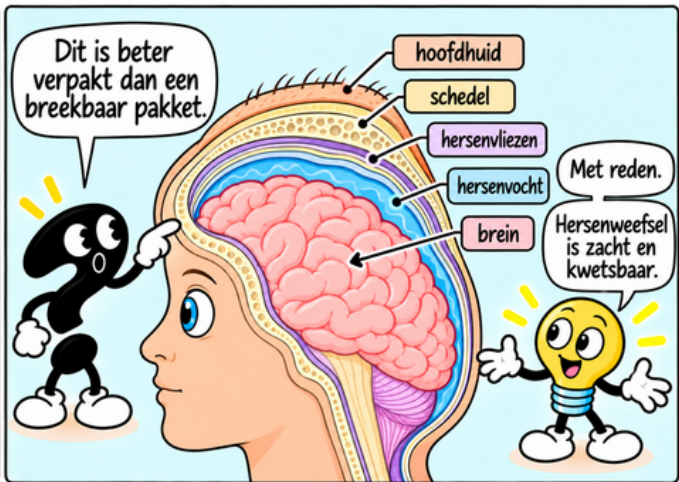
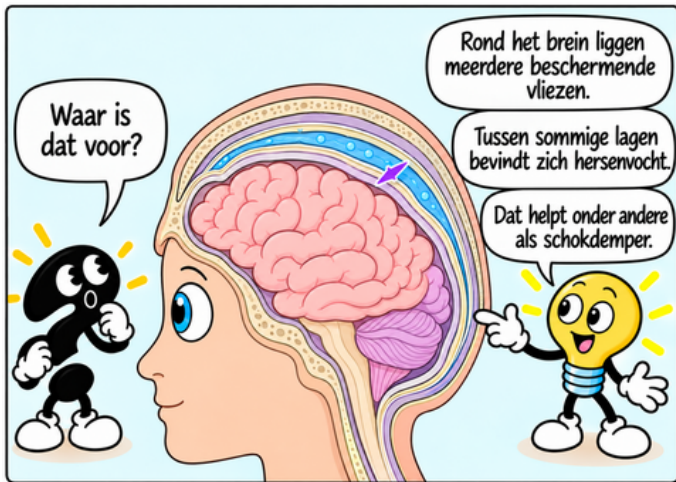


De oogzenuw





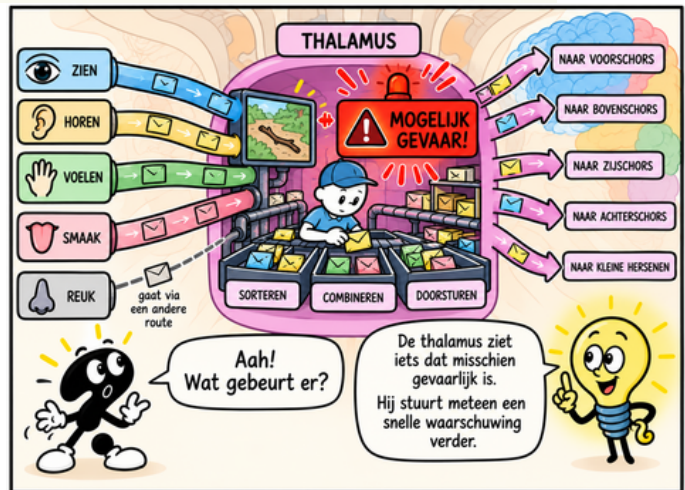
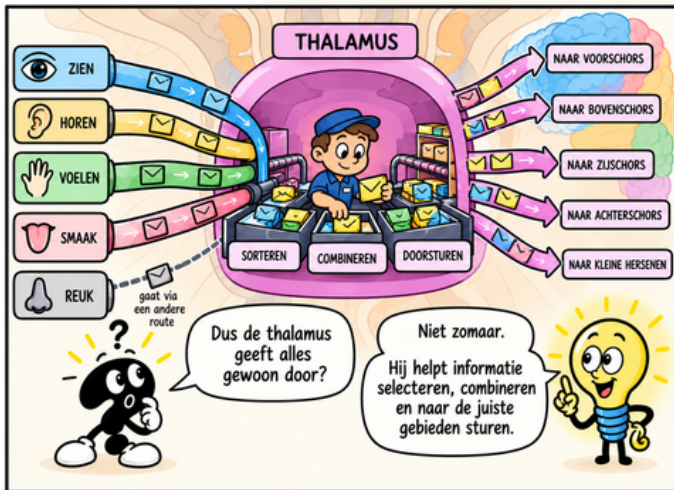
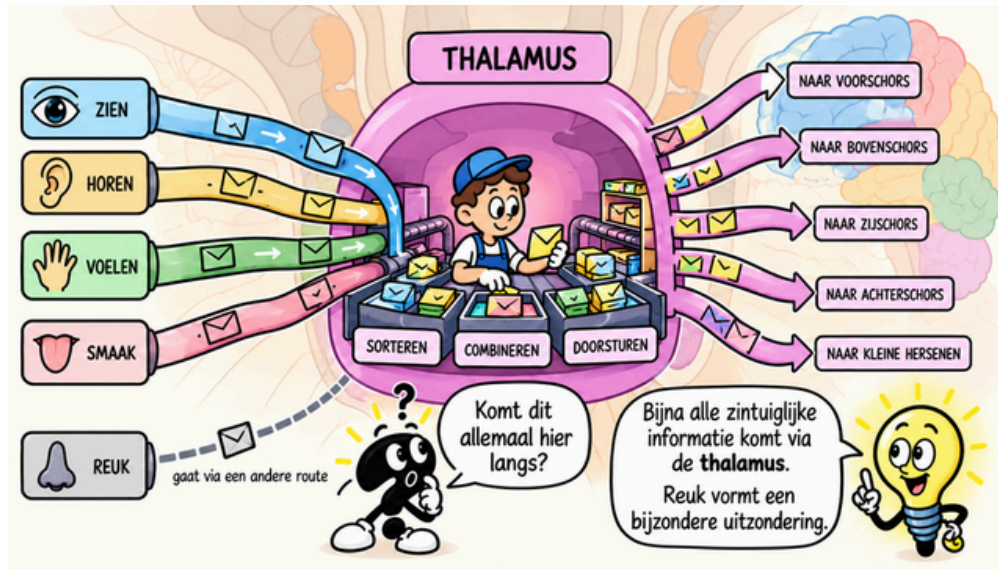
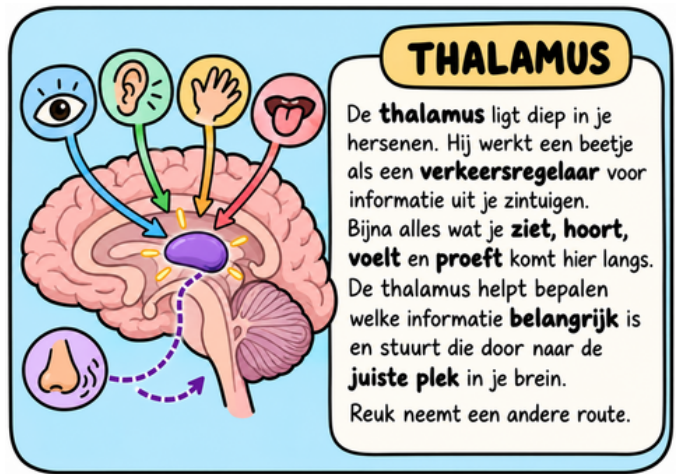
De hersenvliezen



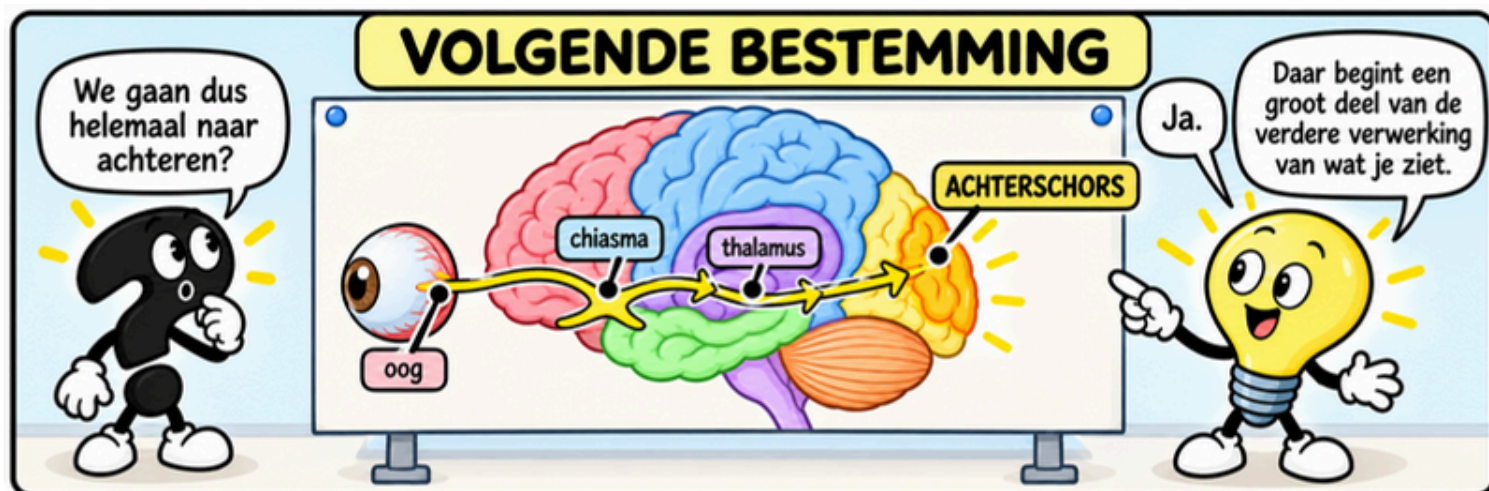
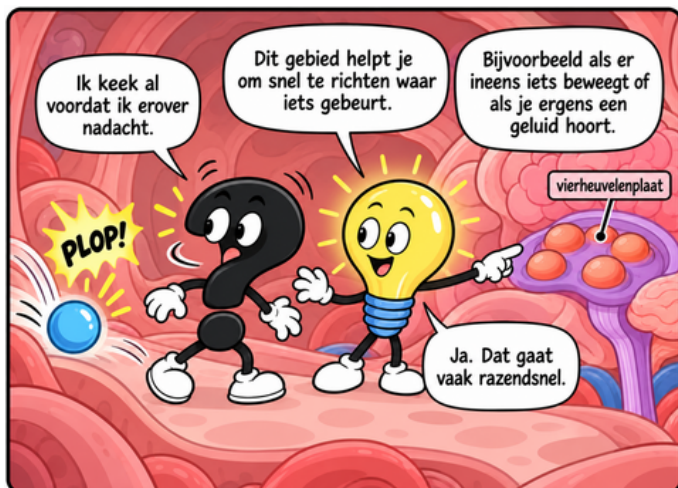
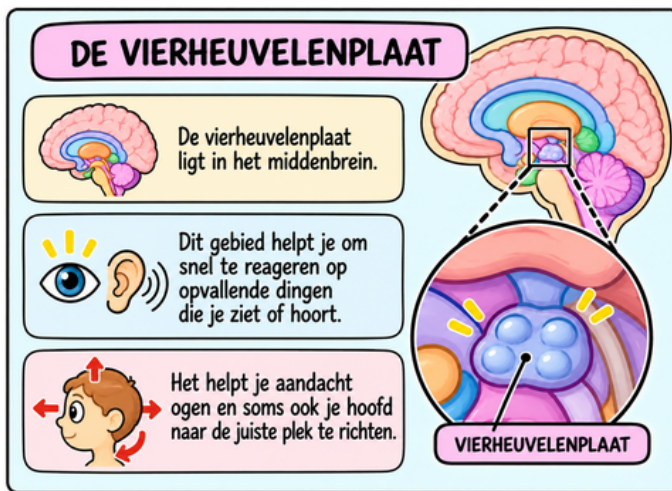
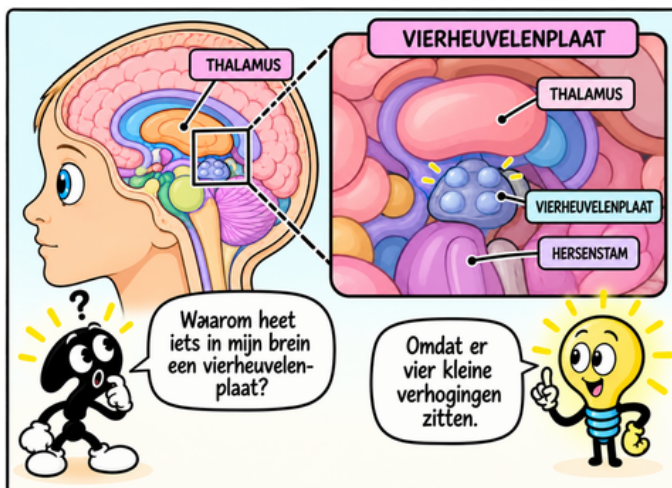
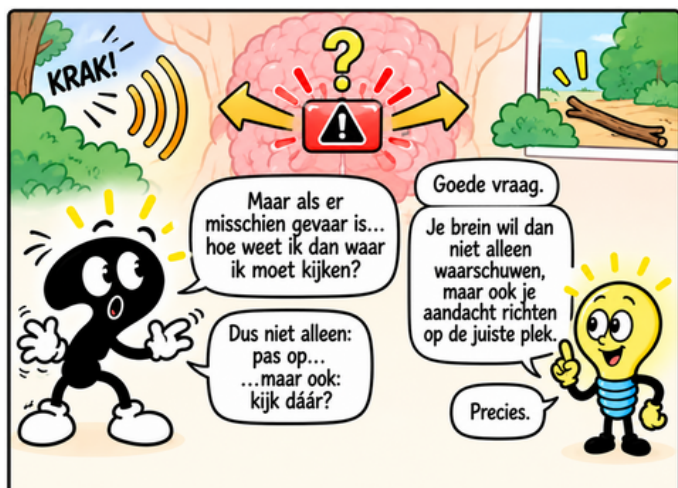
De namen van deze grote gebieden helpen bij het beschrijven waar iets gebeurt.

Ze zijn géén volledig gescheiden afdelingen. Bij bijna alles wat je doet werken meerdere gebieden samen.

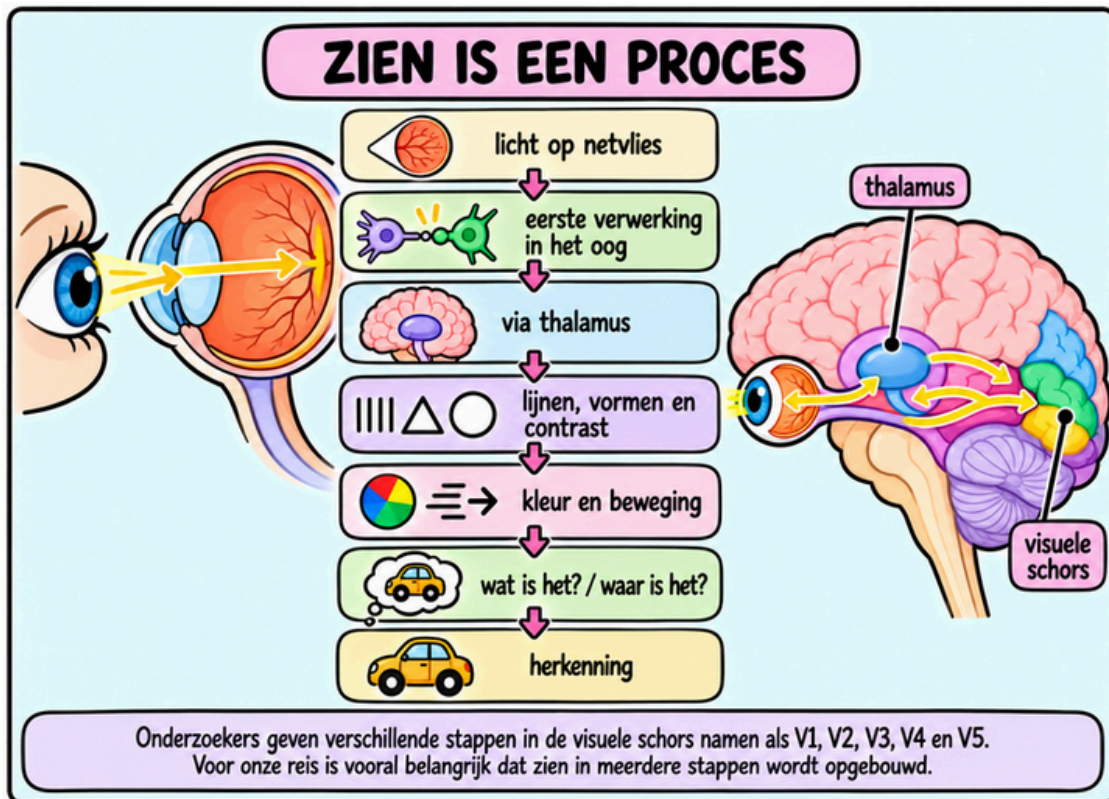
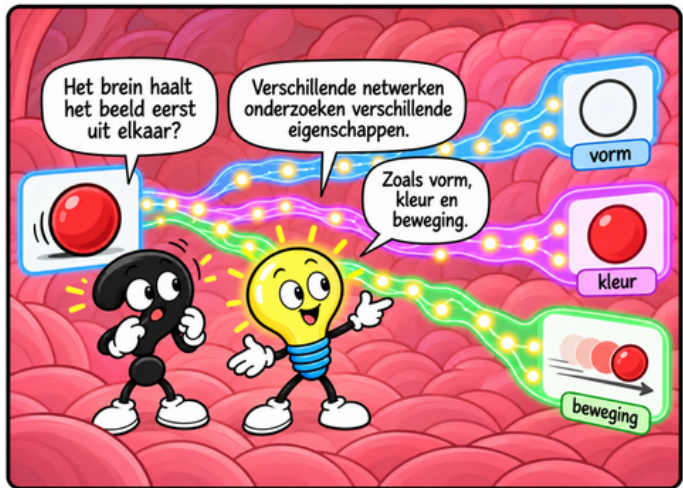
De thalamus



De vierheuvelenplaat



De visuele schors



De bovenschors en de zijschors

WAAR ZIJN WE NU?

BOVENSCHORS

Hier verwerkt je brein onder andere informatie over je lichaam en over waar dingen zich bevinden.

Oké.

Doe je ogen eens dicht.

Weet je waar je hand is?

Natuurlijk.

O...

Maar je kunt hem niet zien.

Dus mijn brein houdt voortdurend een kaart van mijn lichaam bij?

Je lichaam zit vol sensoren.

Ze vertellen je brein bijvoorbeeld wat je aanraakt, hoe je gewrichten staan en hoe je spieren bewegen.

huid

spieren

gewrichten

Precies.

JE LICHAAM IN JE BREIN

LICHAAMSSCHORS

HIJD

SPIEREN

GEWRICHTEN

In de lichaamsschors komt informatie uit je huid, spieren en gewrichten binnen. Daardoor weet je bijvoorbeeld waar je arm is, ook als je hem niet ziet.

Waarom zijn die handen en lippen zo enorm?

Omdat niet ieder lichaamsdeel evenveel ruimte in de hersenschors krijgt.

Gebieden die heel gevoelig zijn, krijgen meer hersenschors.

lichaamsschors

Mijn voeten raken de hele tijd de grond.

Waarom let ik daar meestal niet op?

Anders zou het wel heel druk worden.

Omdat je brein niet alles even belangrijk vindt.

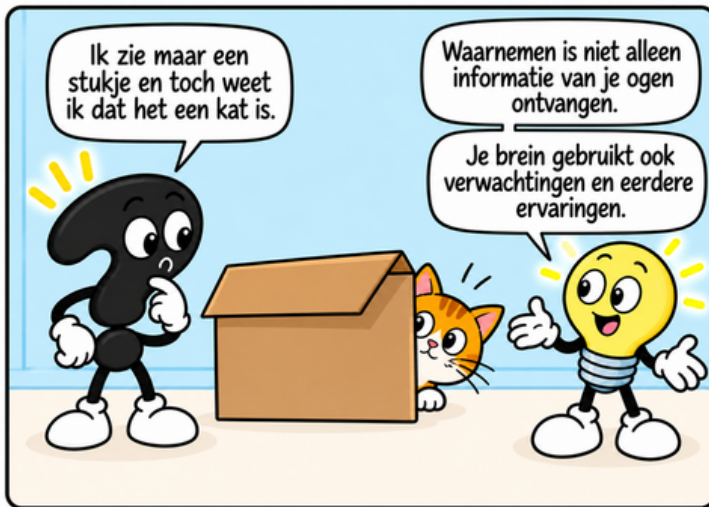
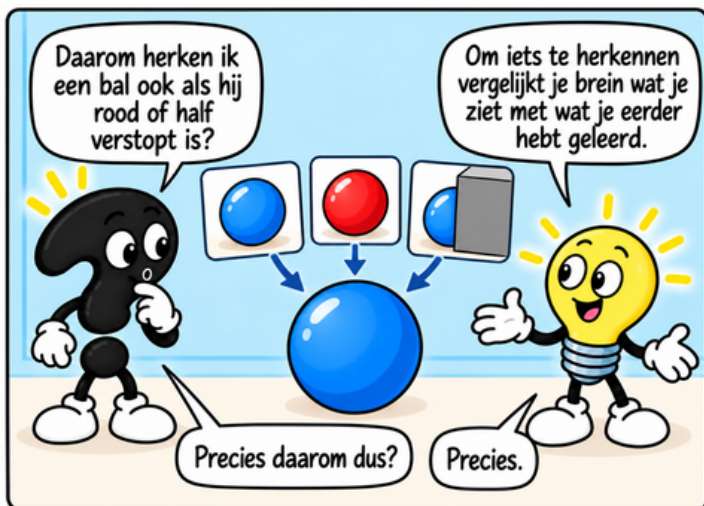
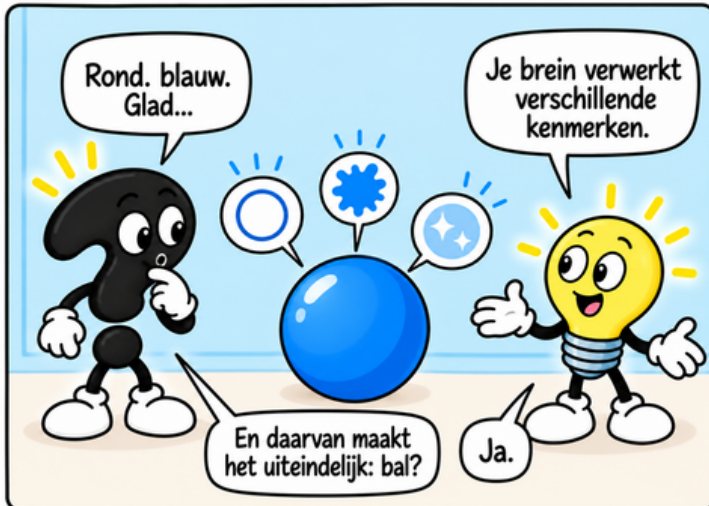
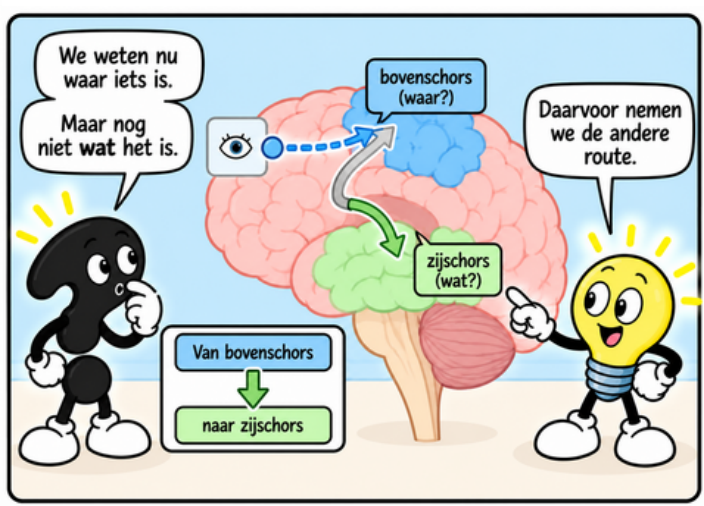
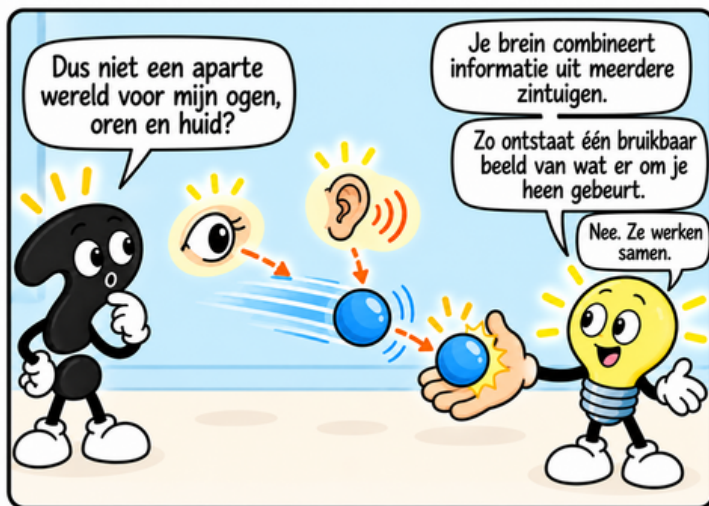
Prikkels die steeds hetzelfde blijven, kunnen naar de achtergrond verdwijnen.

De bovenschors gebruikt ook visuele informatie.

...maar waar het is?

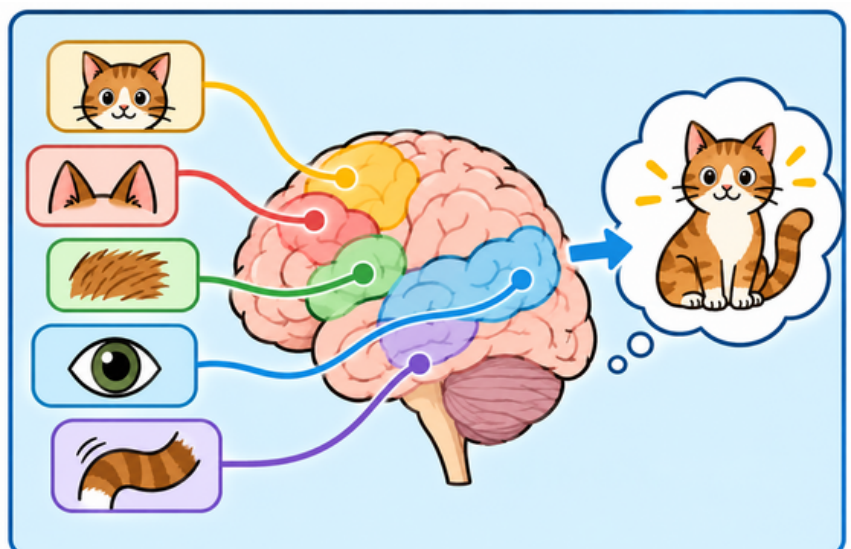
Niet vooral om te herkennen wat iets is...

En hoe het beweegt.

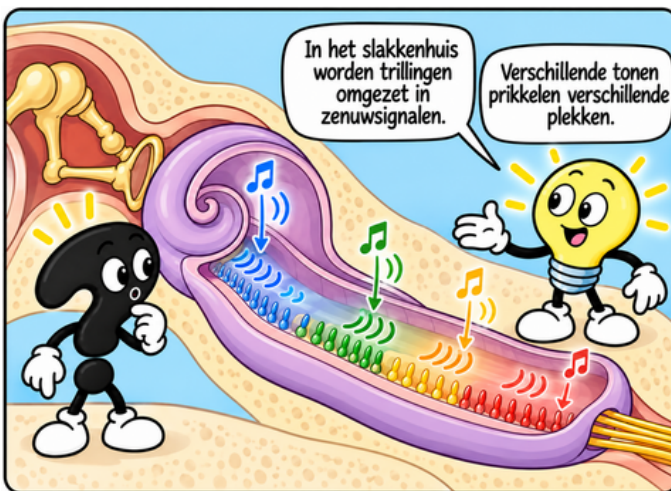
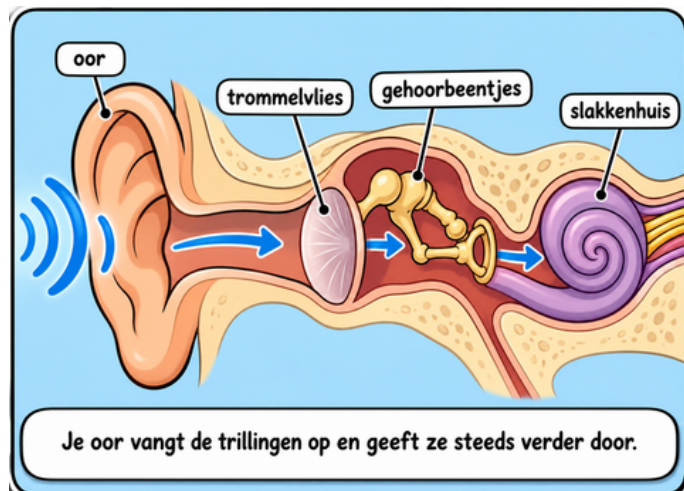
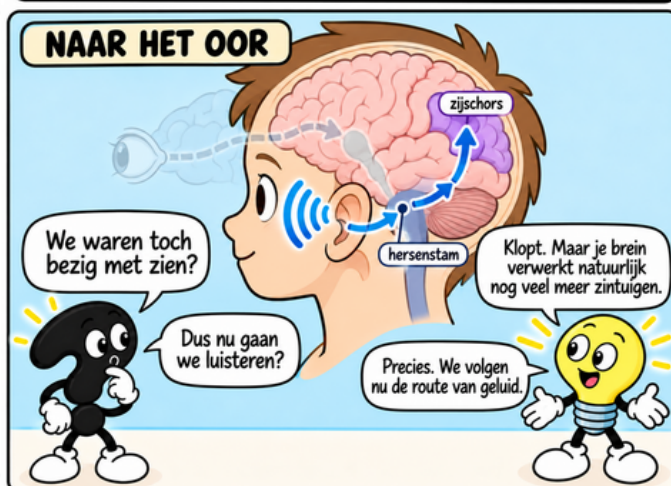
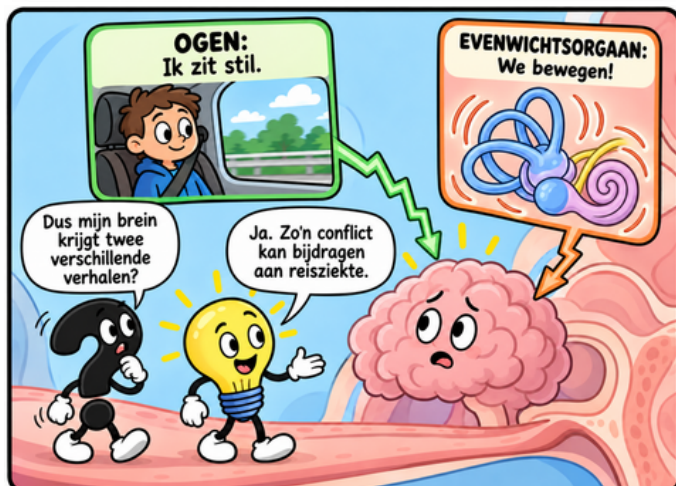
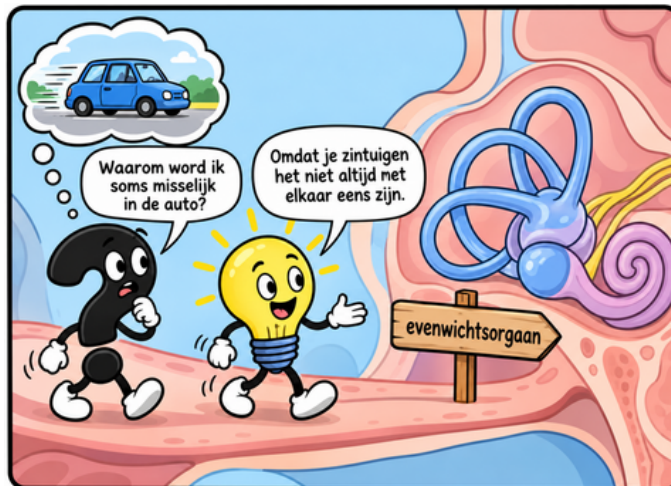
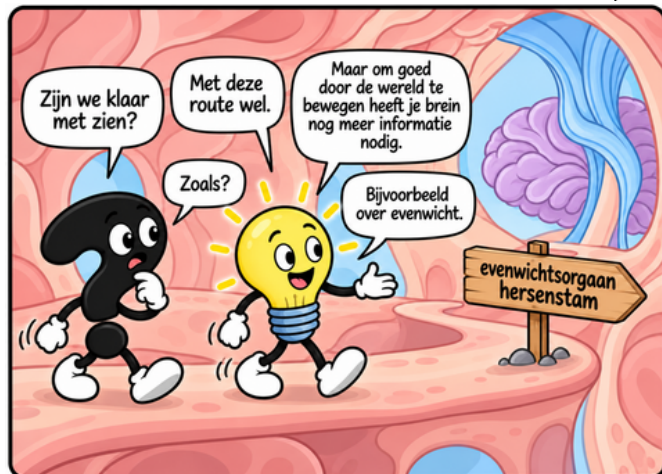


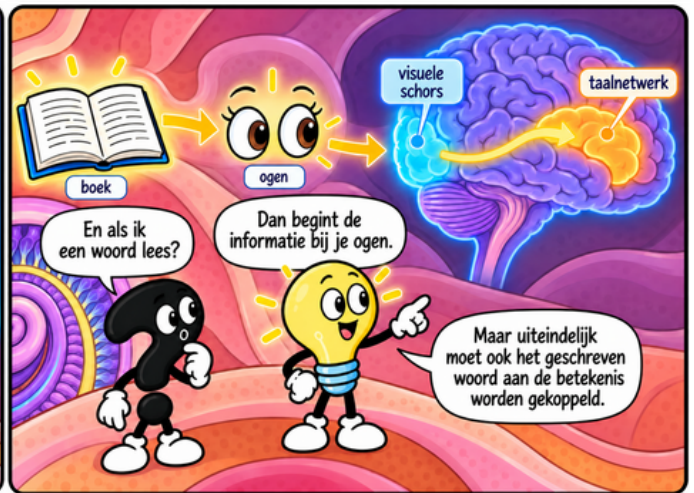
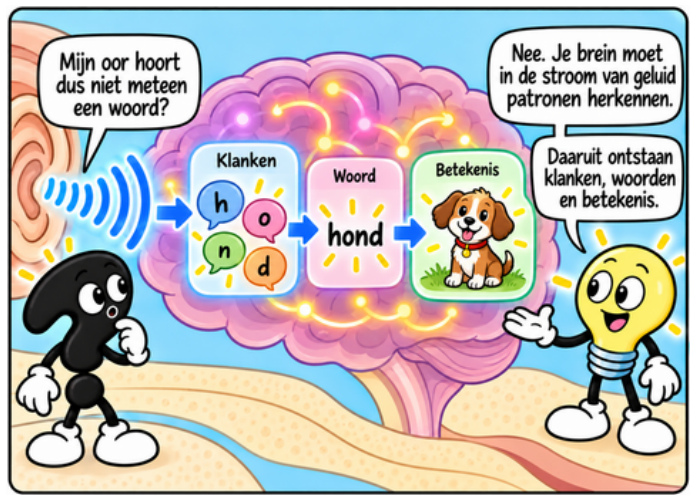
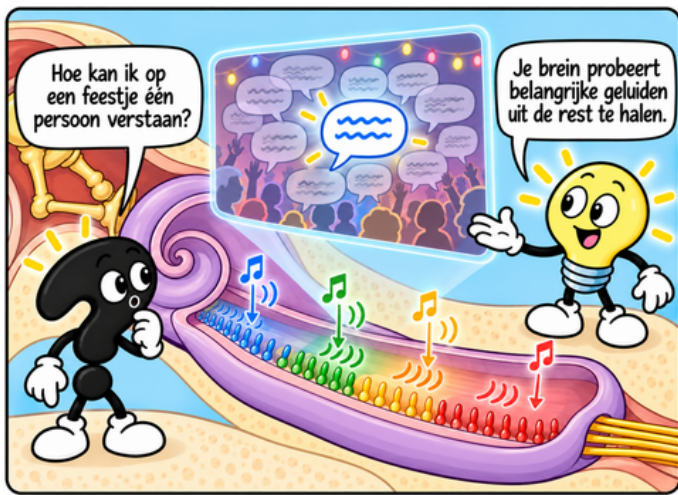
HERKENNEN IS TEAMWERK

Er bestaat niet één cel waarin je oma, je fiets of je kat is opgeslagen. Herkennen ontstaat door samenwerking tussen verschillende hersennetwerken.

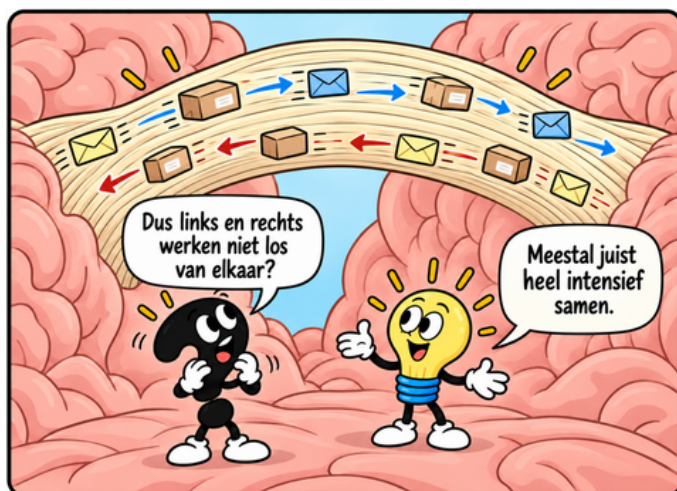
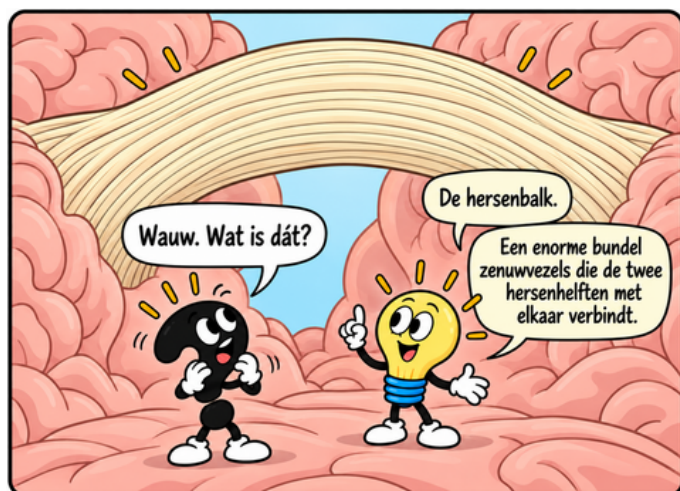
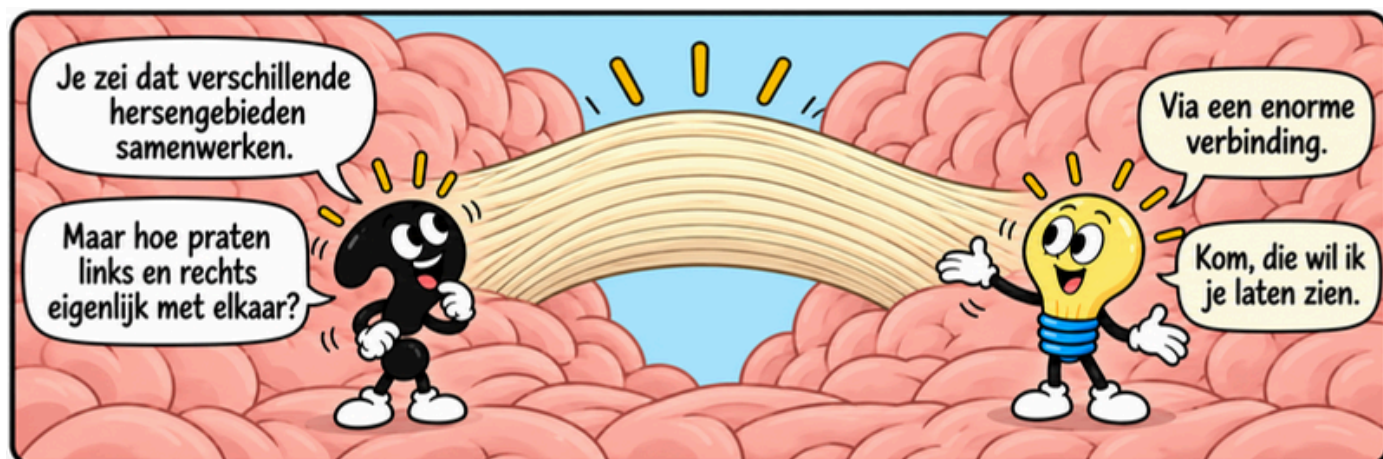


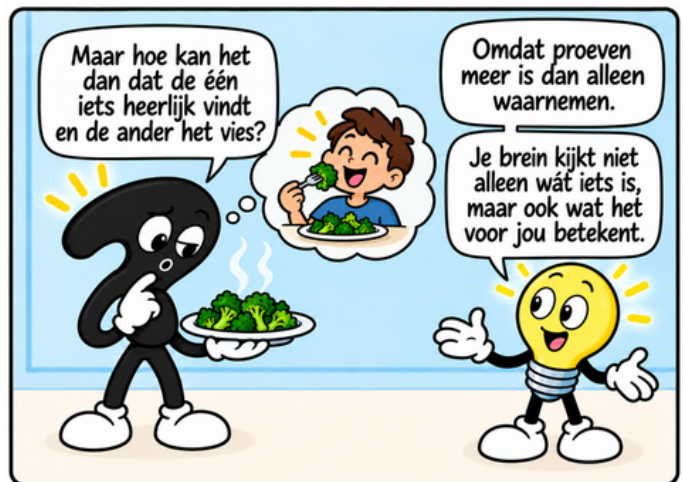
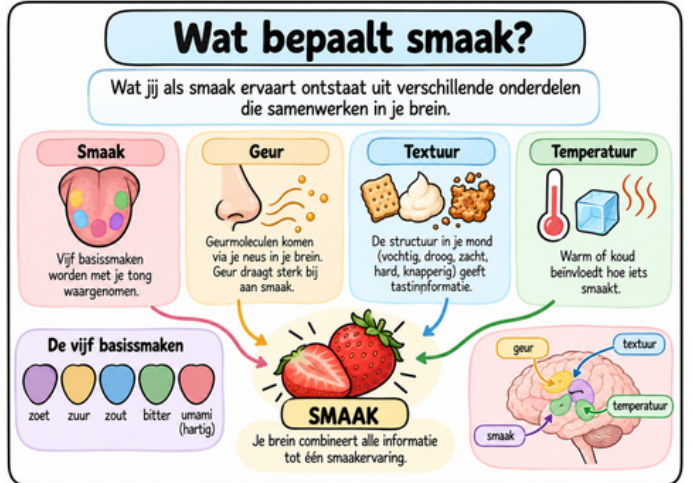
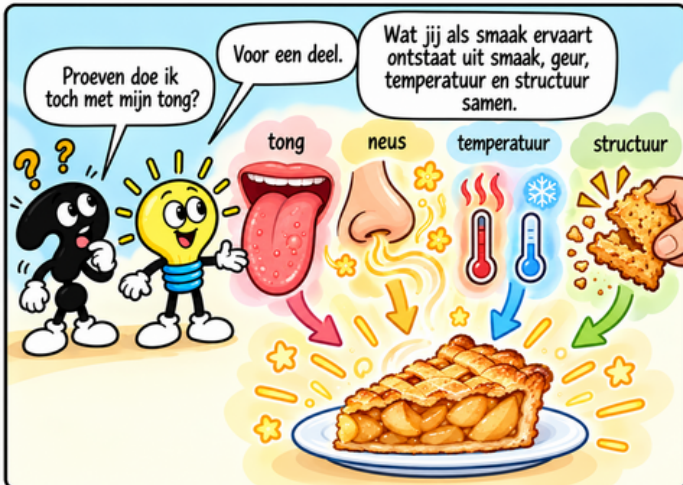
Het evenwichtsorgaan en horen



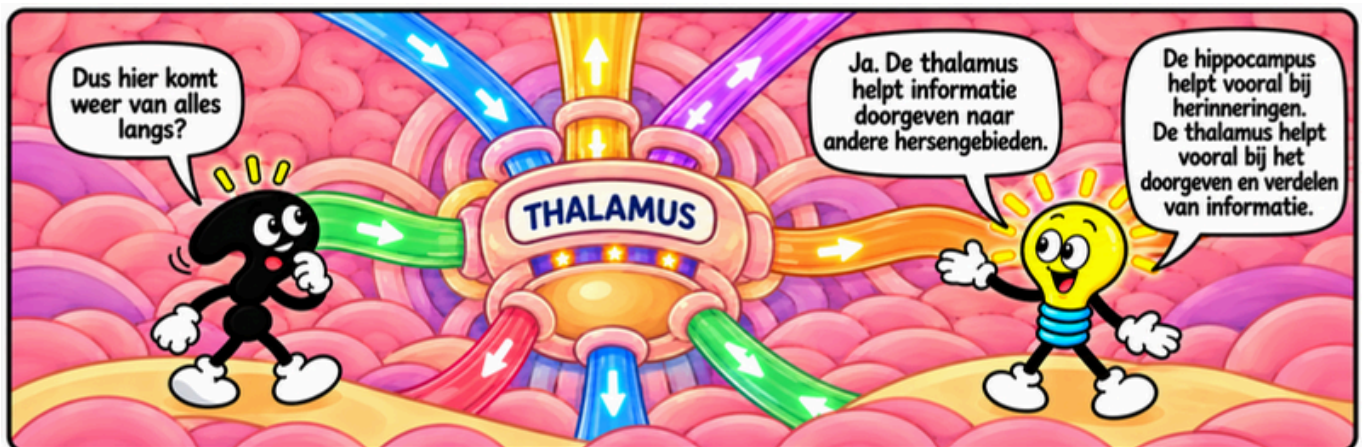
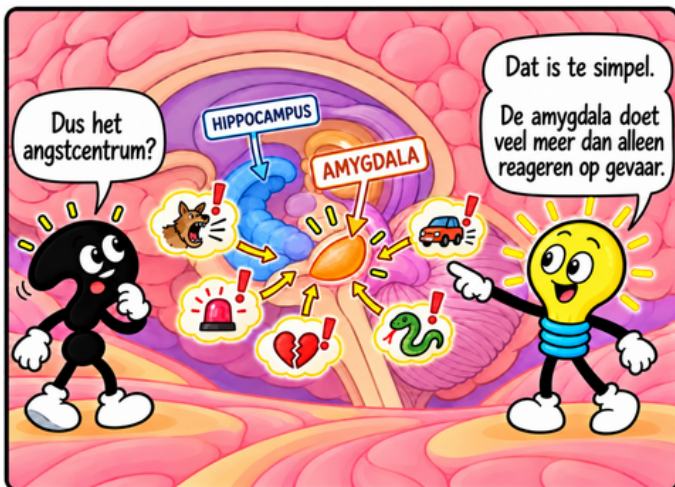
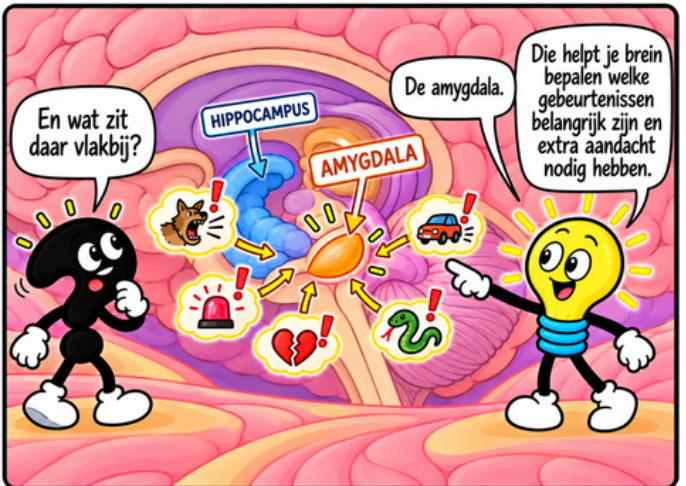
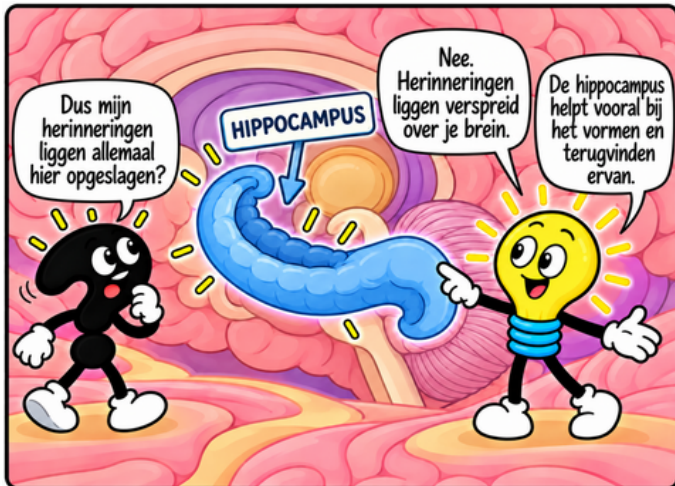
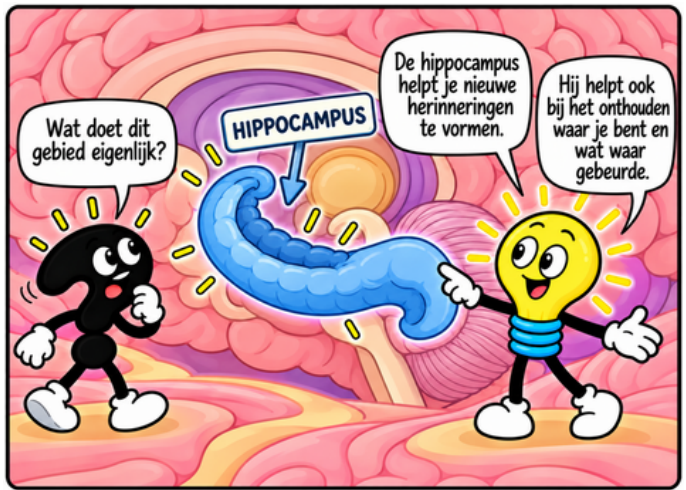
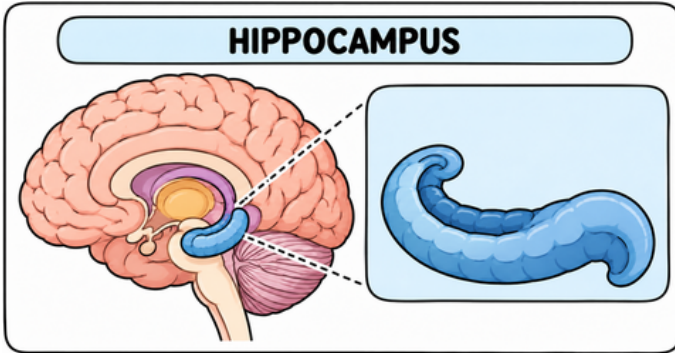


De hersenbalk

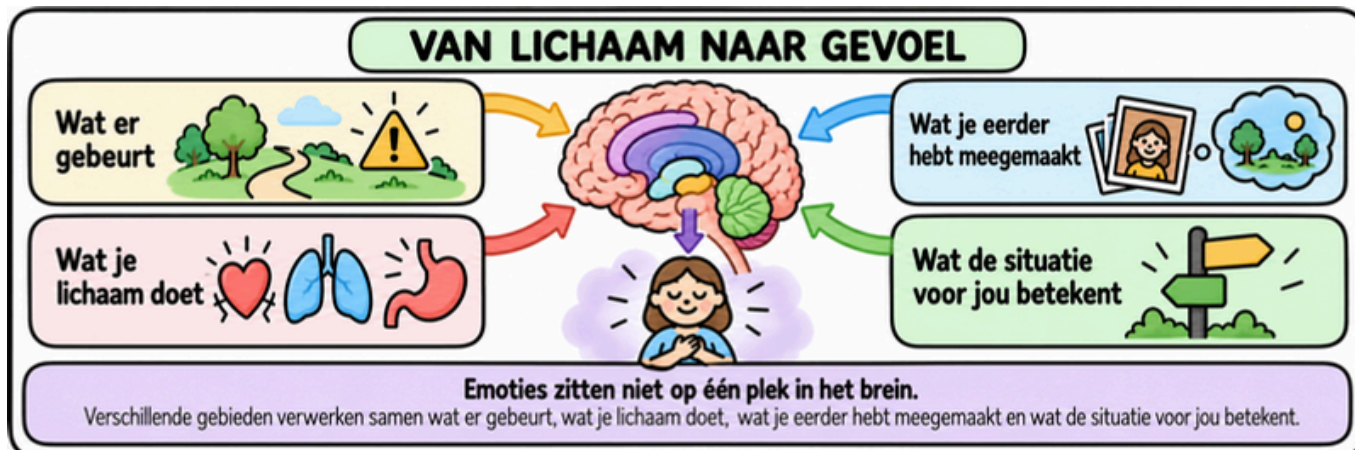
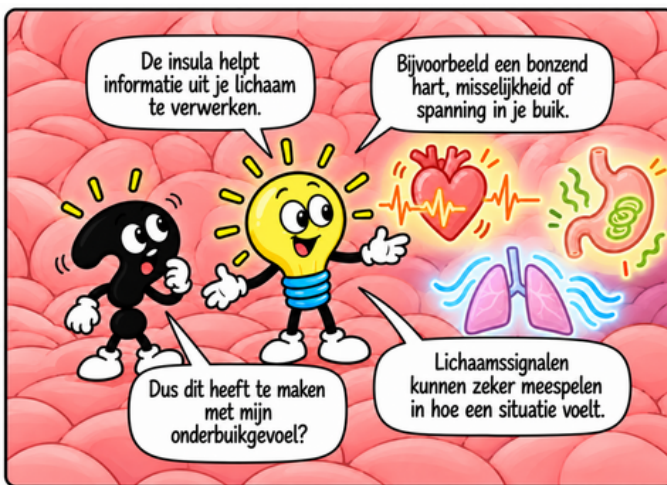
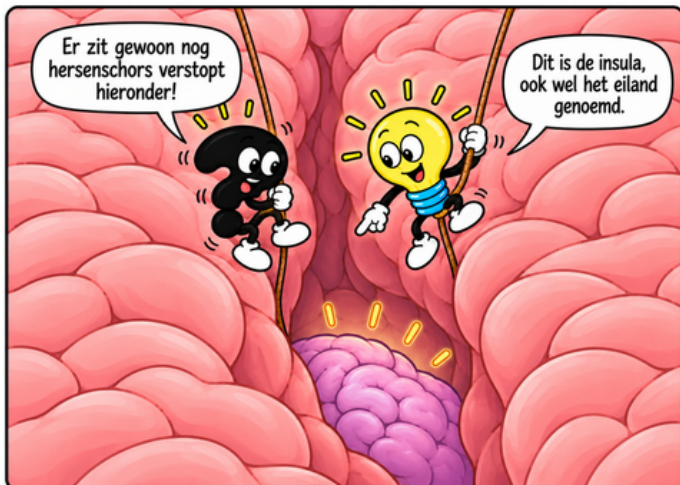
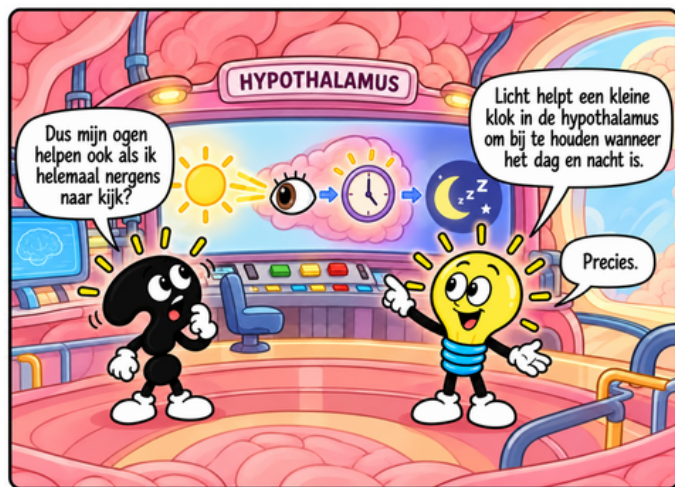
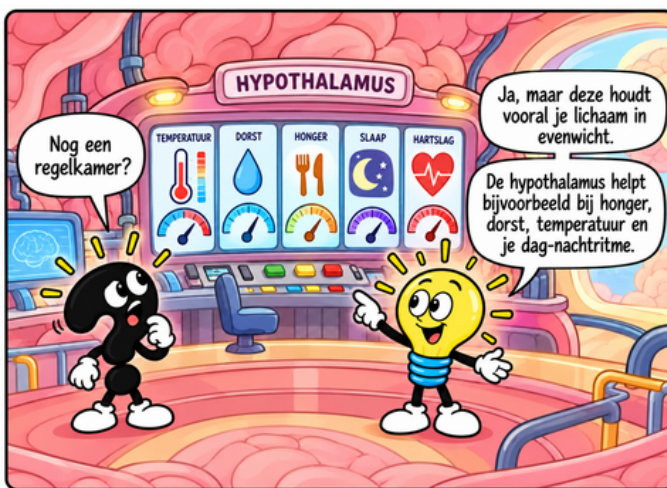
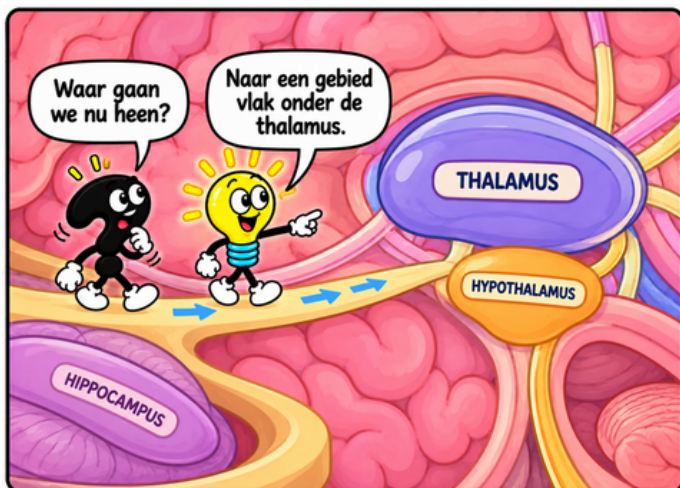




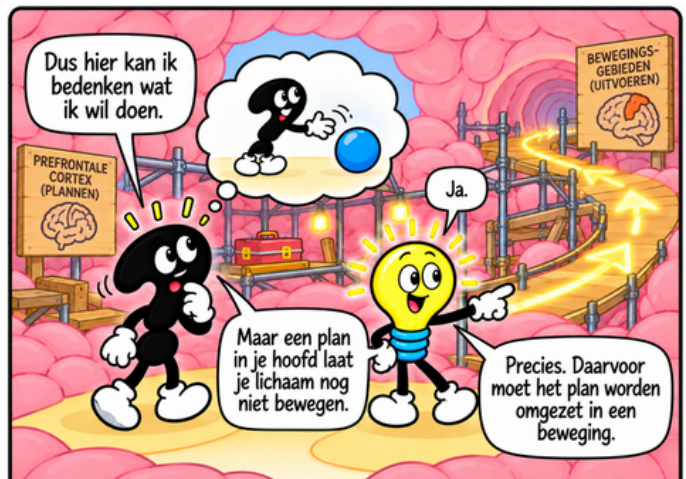
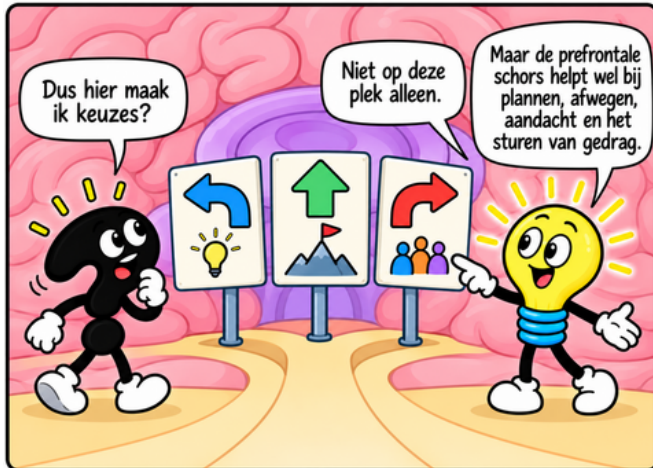
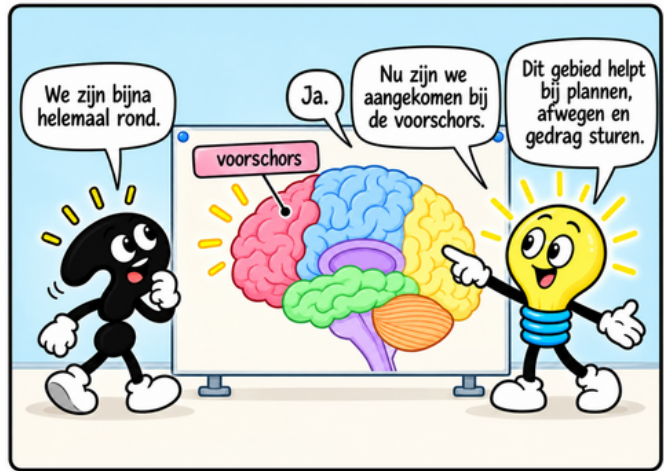
De hippocampus



De HYPOTHALAMUS



de voorschors/ werkgeheugen

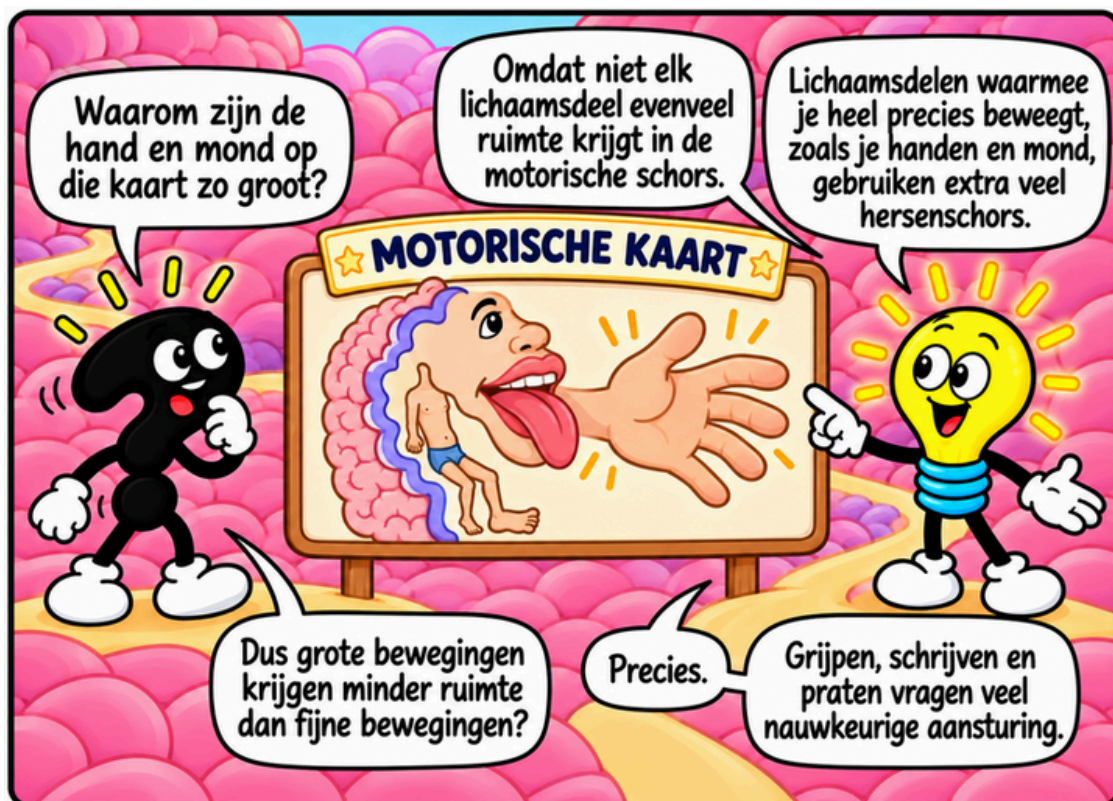
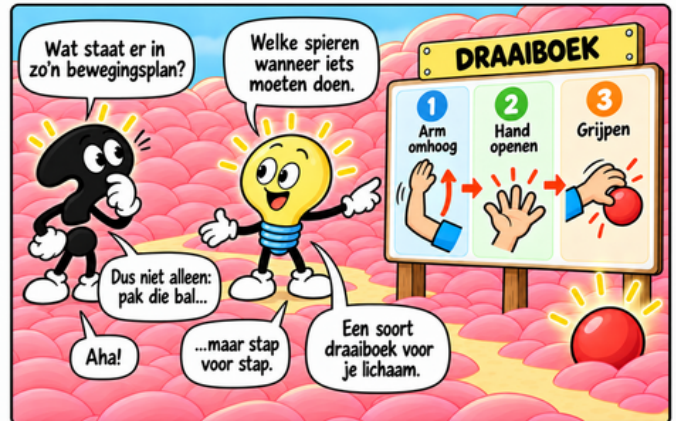


MOTORISCHE SCHORS

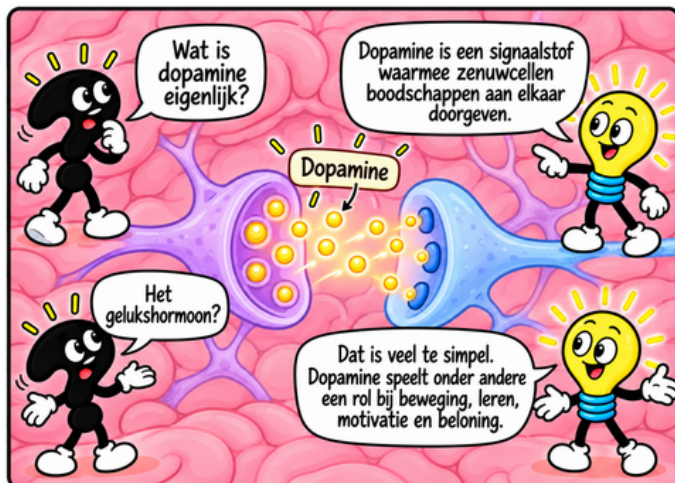
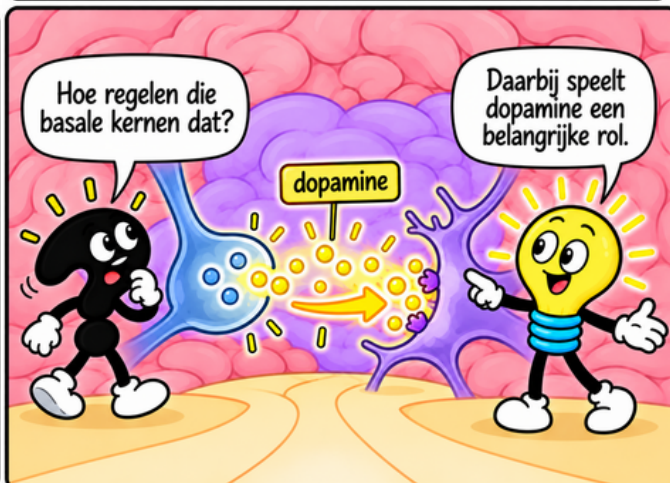
de premotorische schors



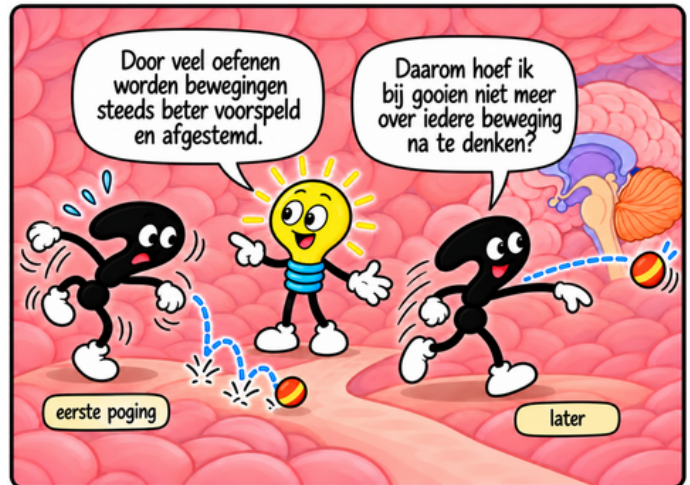
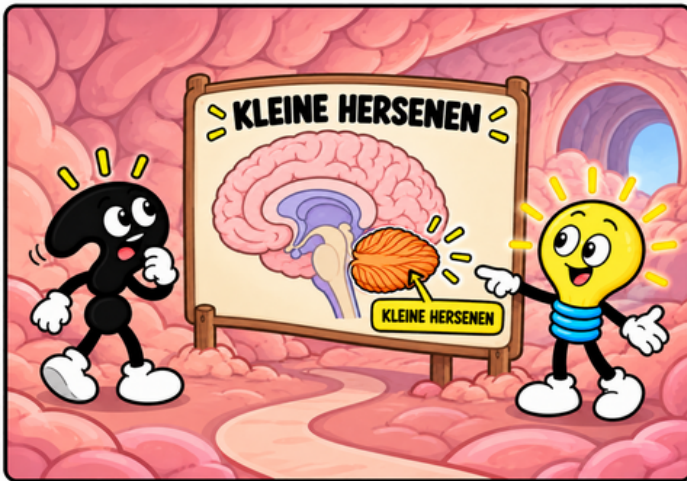
het bewegingsplan



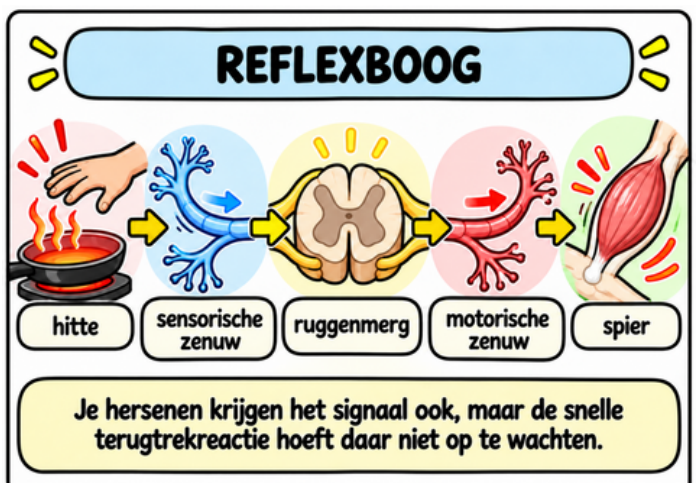
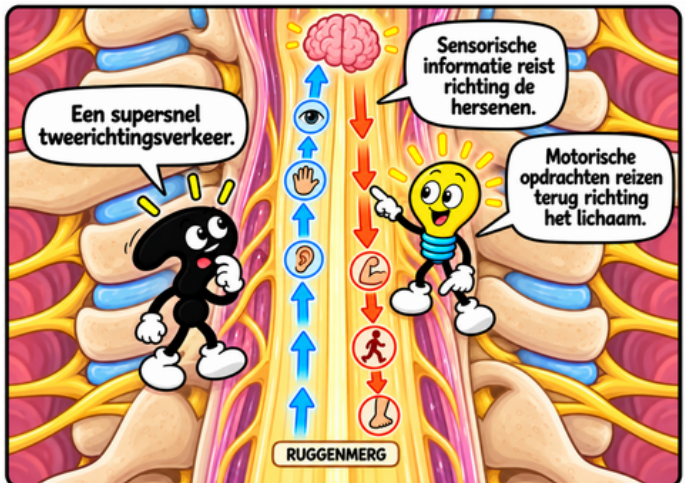
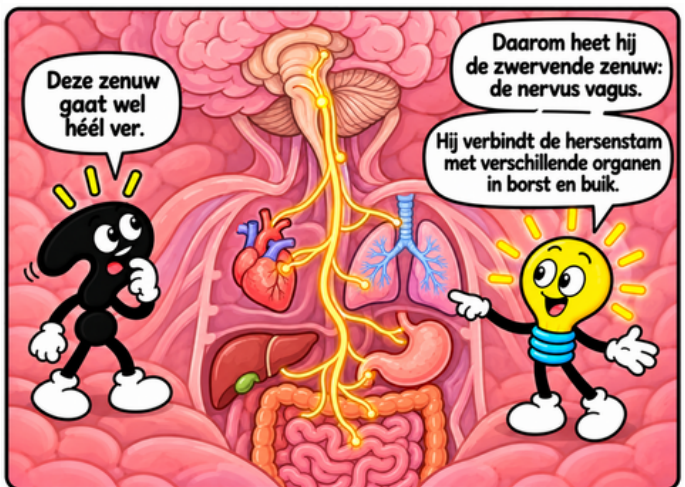
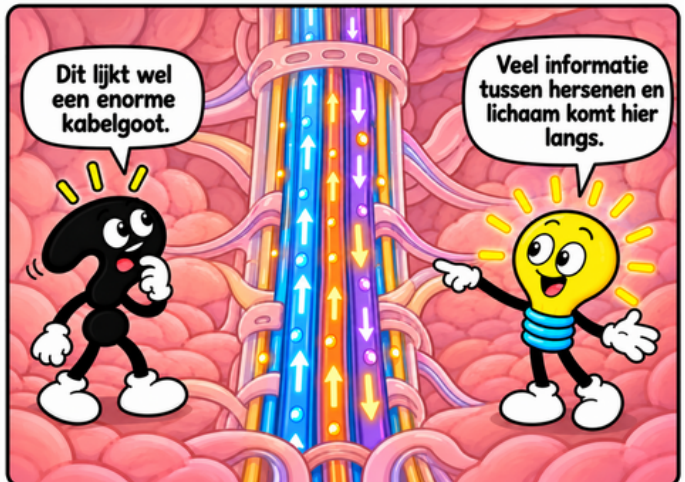
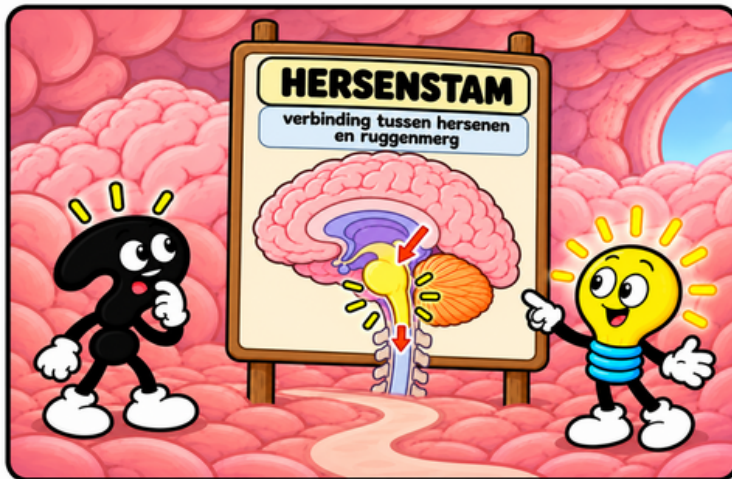
Basale kernen



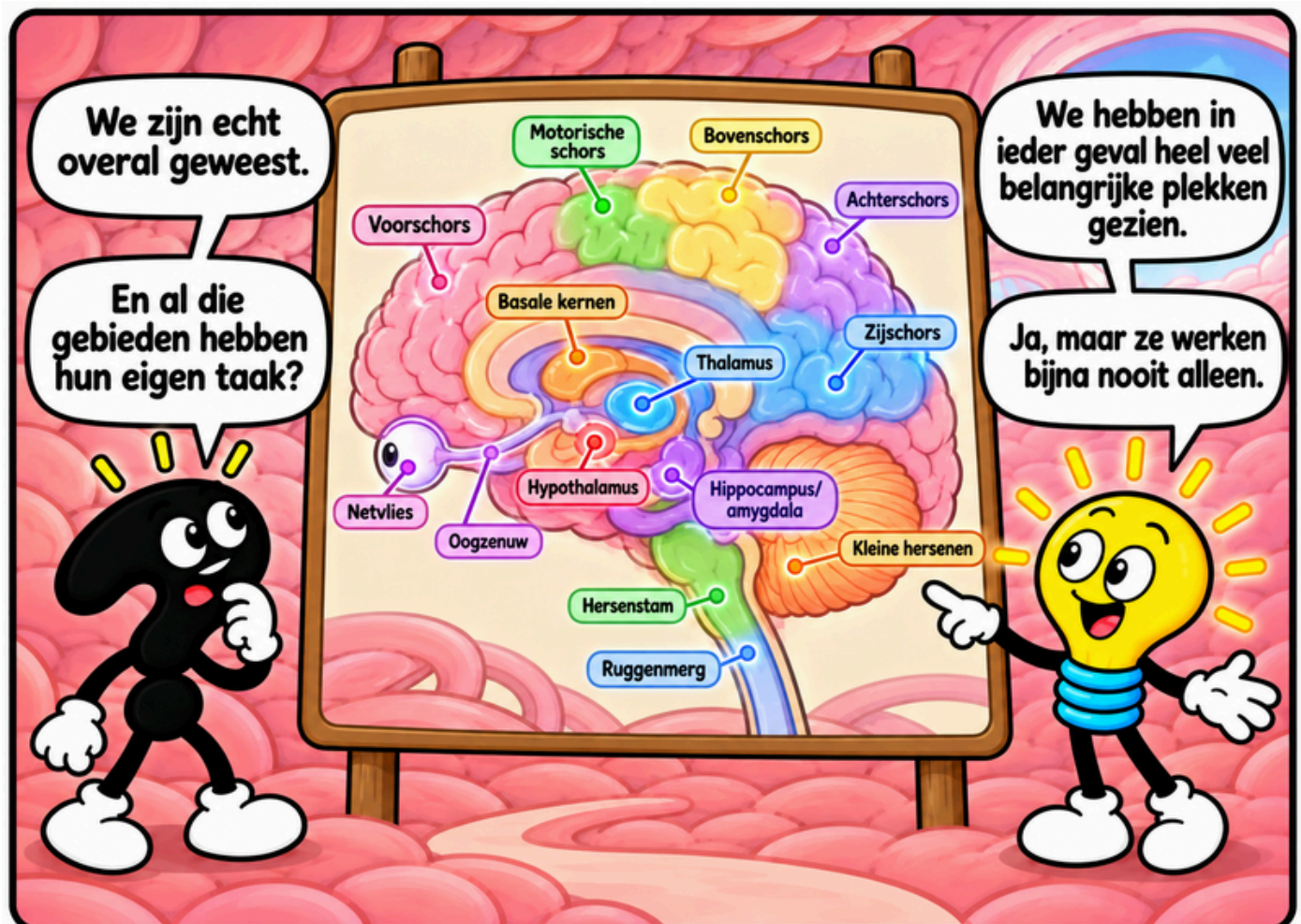
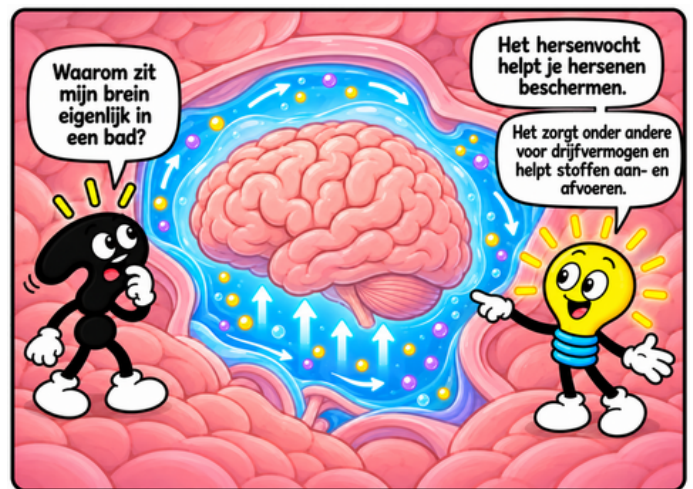
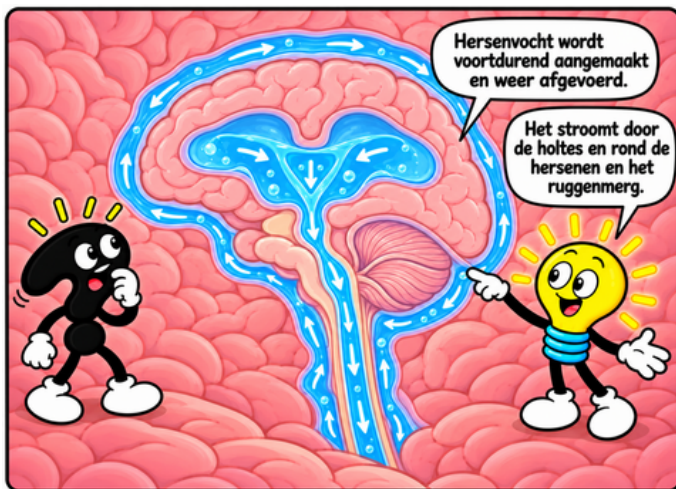
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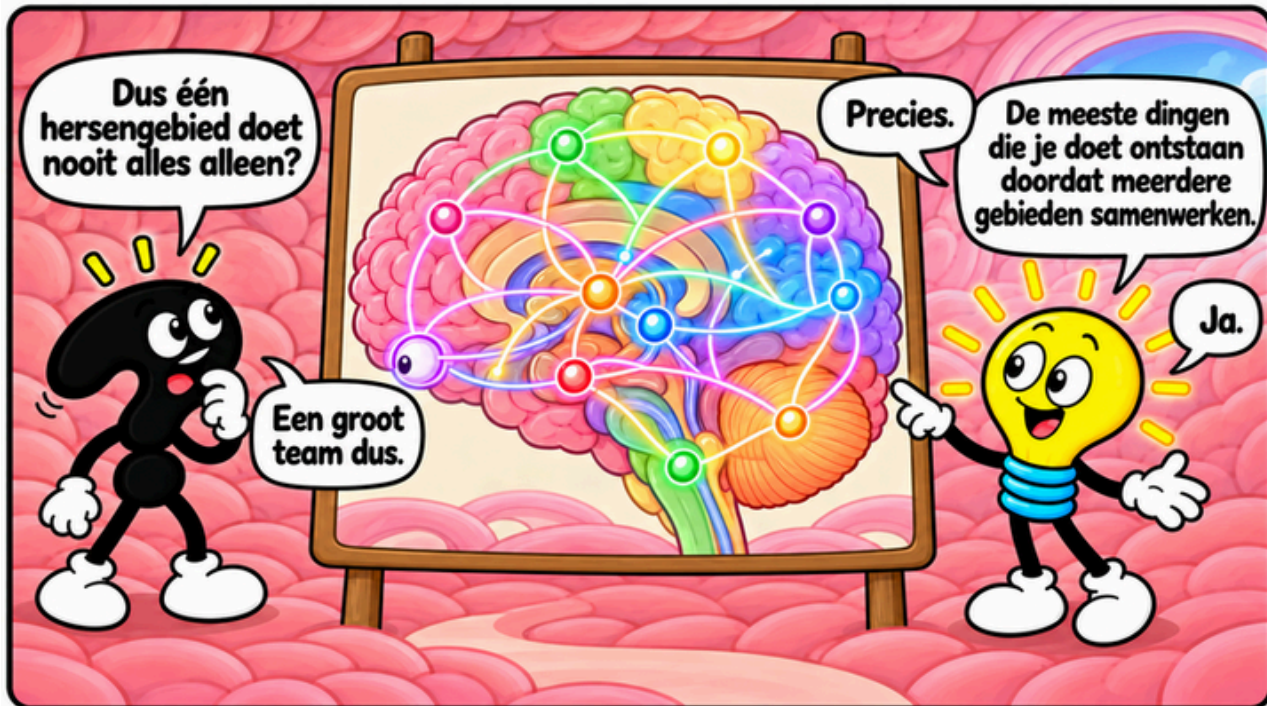


De hersenstam en ruggenmerg



HERSENVOCHT EN DE VENTRIKELS





The End