



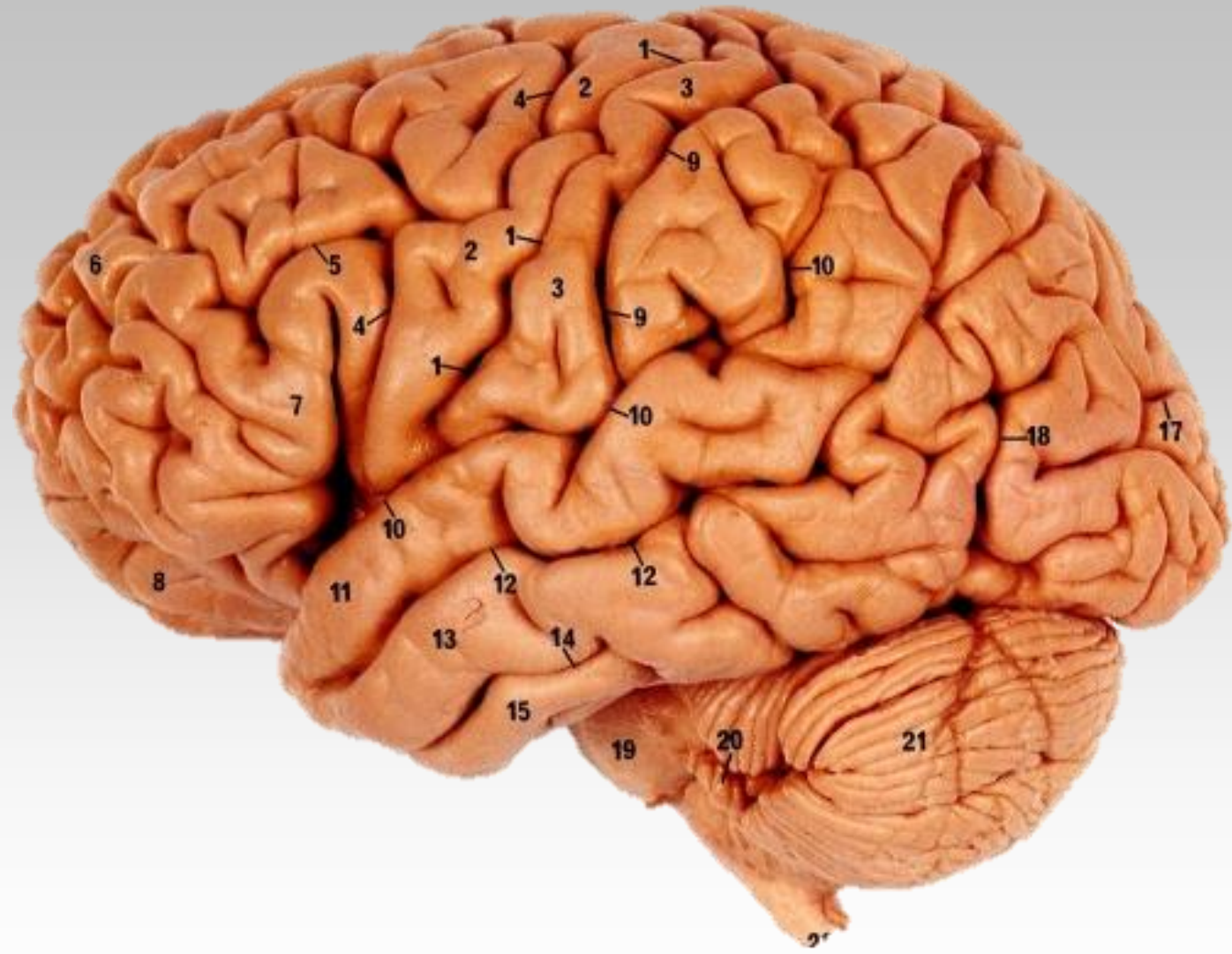
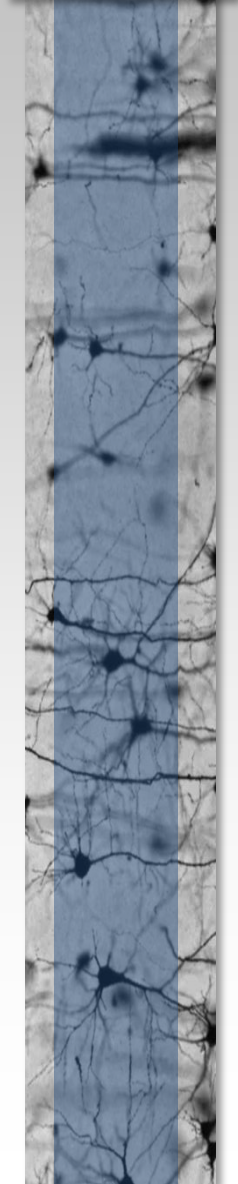
Umysł na książkach mózg natłogowego czytacza

Paweł M. Boguszewski

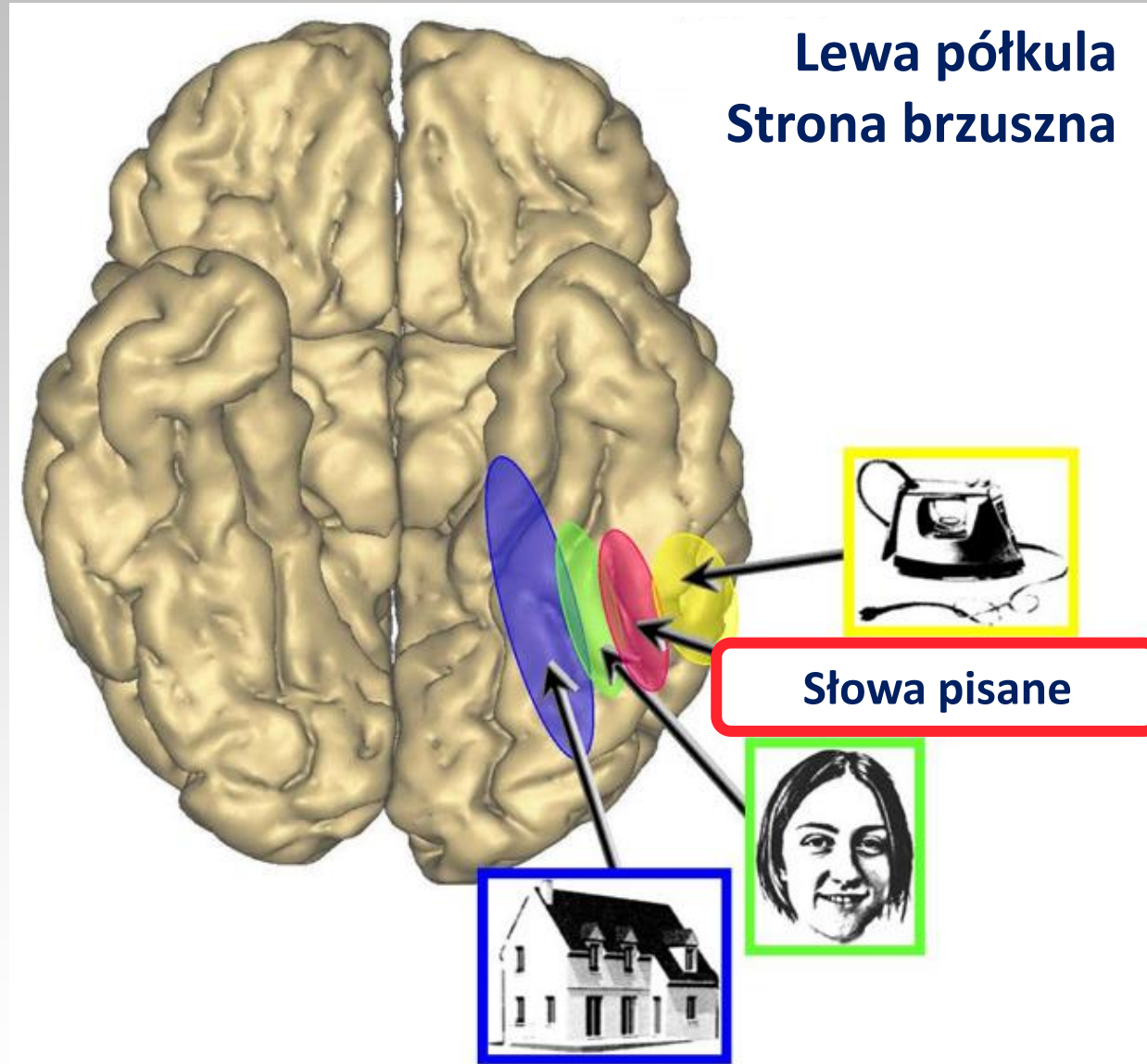
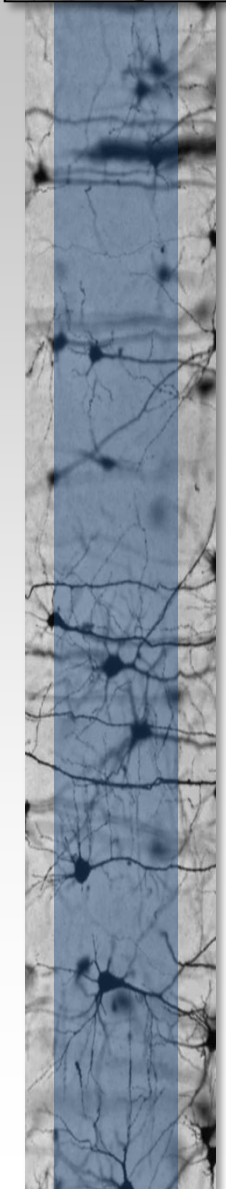
Nencki Institute of Experimental Biology.

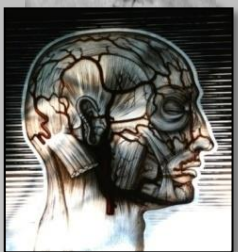
p.boguszewski@nencki.gov.pl





Czytanie - Obszar wzrokowej formy słów

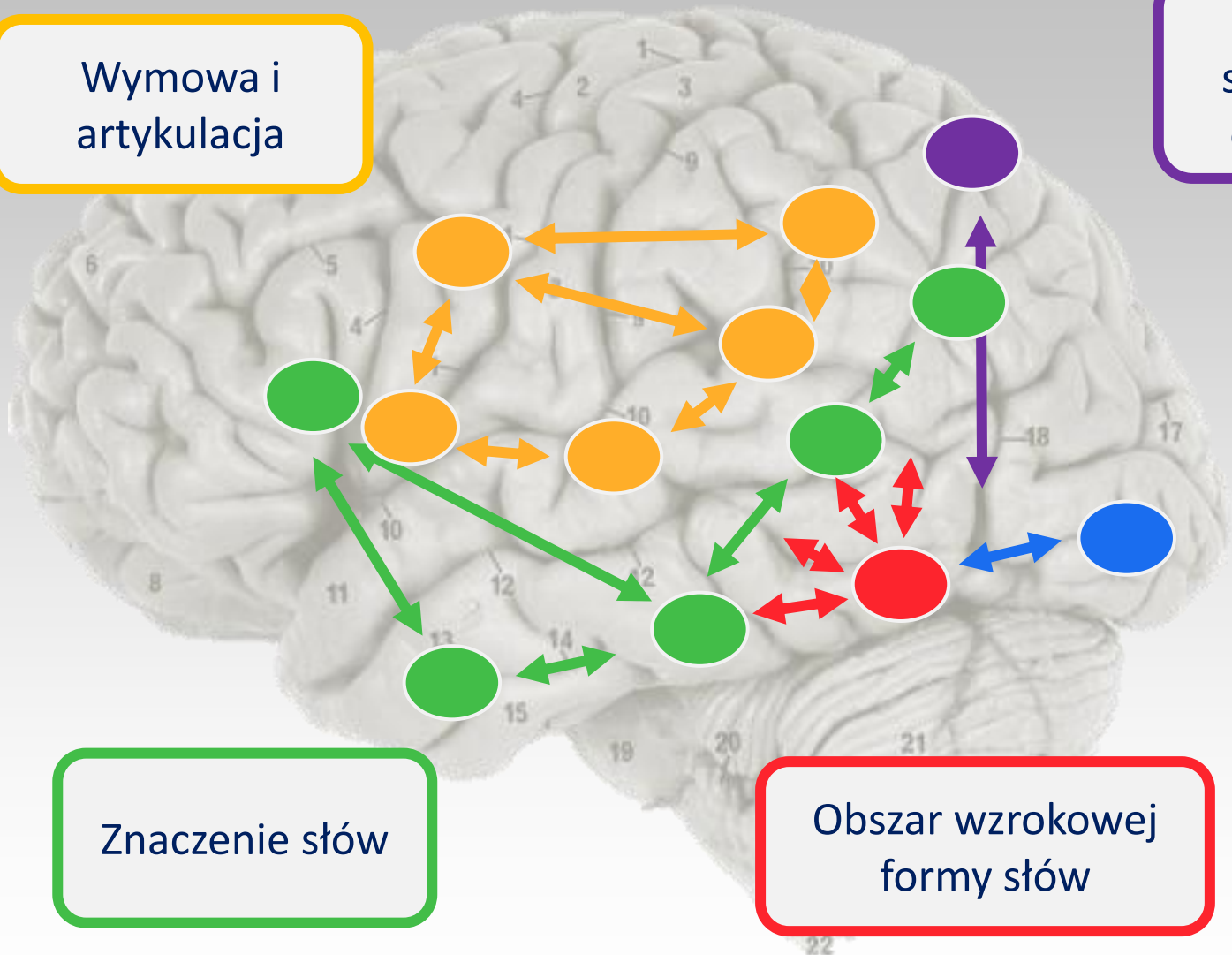




Model czytania

Wymowa i artykulacja

Uwaga i sterowanie czytaniem

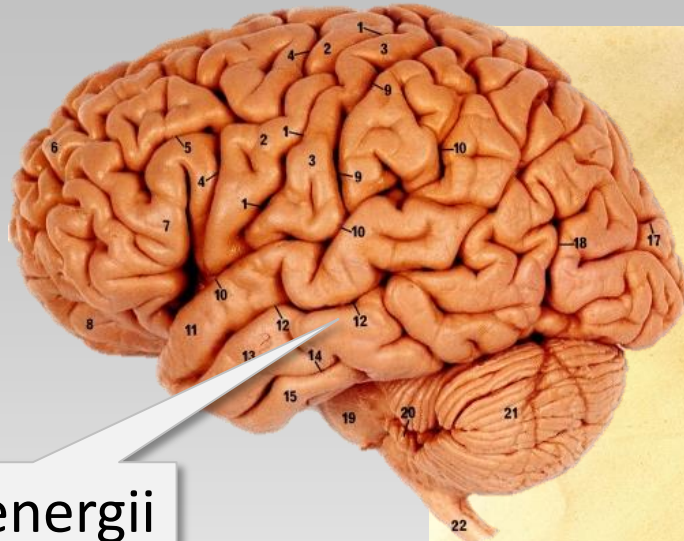


Znaczenie słów

Obszar wzrokowej formy słów

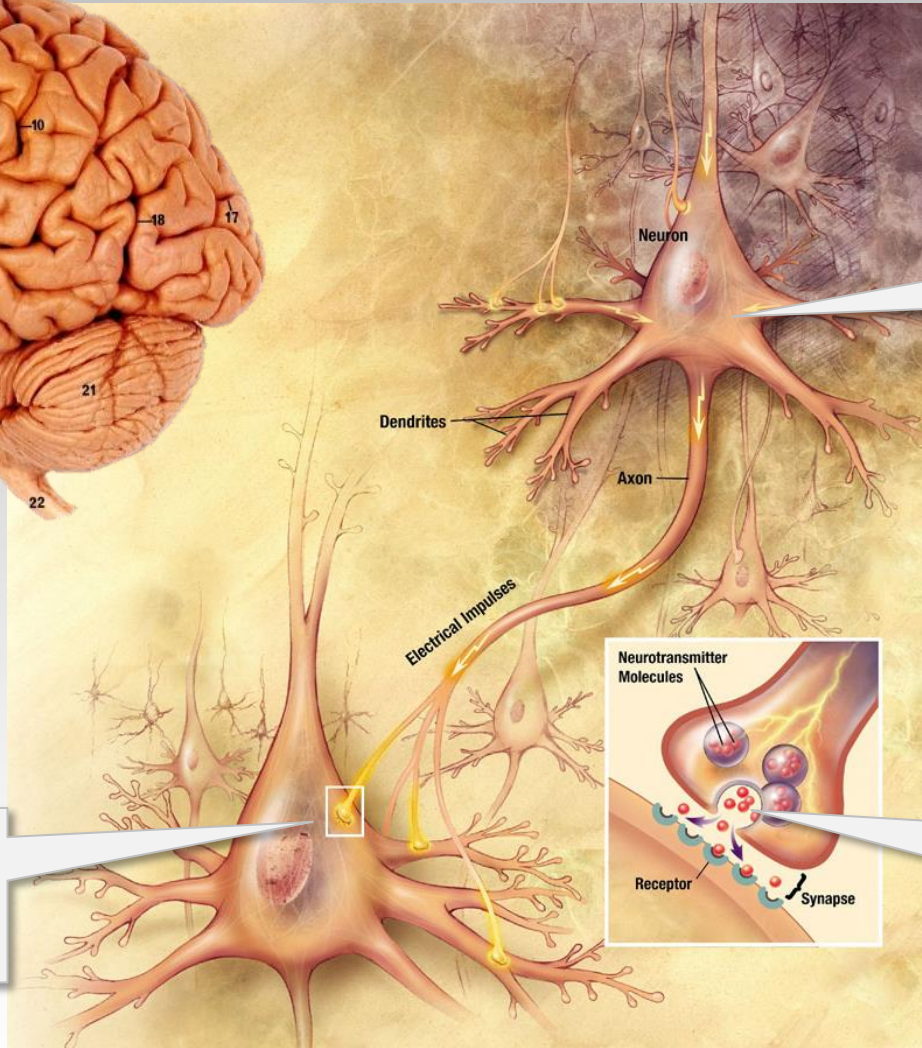
Wejście wzrokowe

Mózg – podstawowe informacje



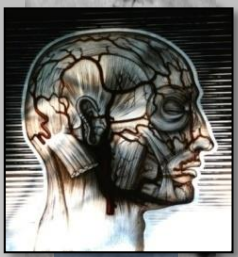
20% energii
20 Wat

1000 - 10000
synaps

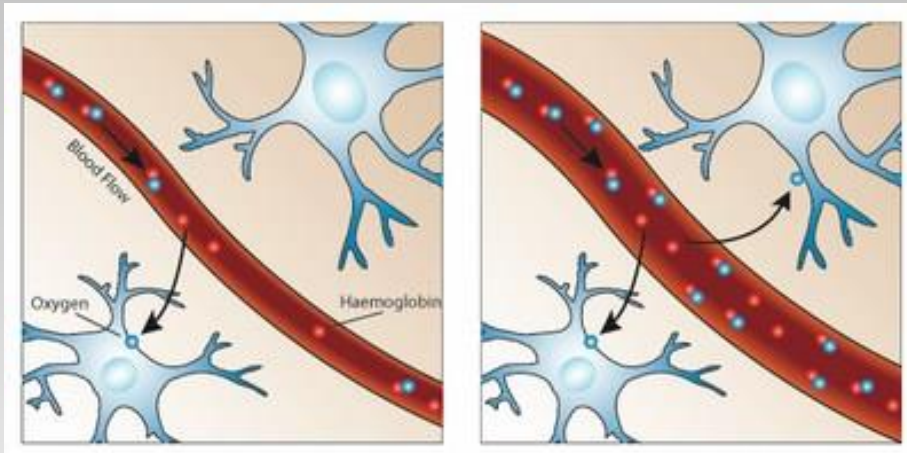


86 miliardów
neuronów

Impulsy
elektryczne
i chemiczne

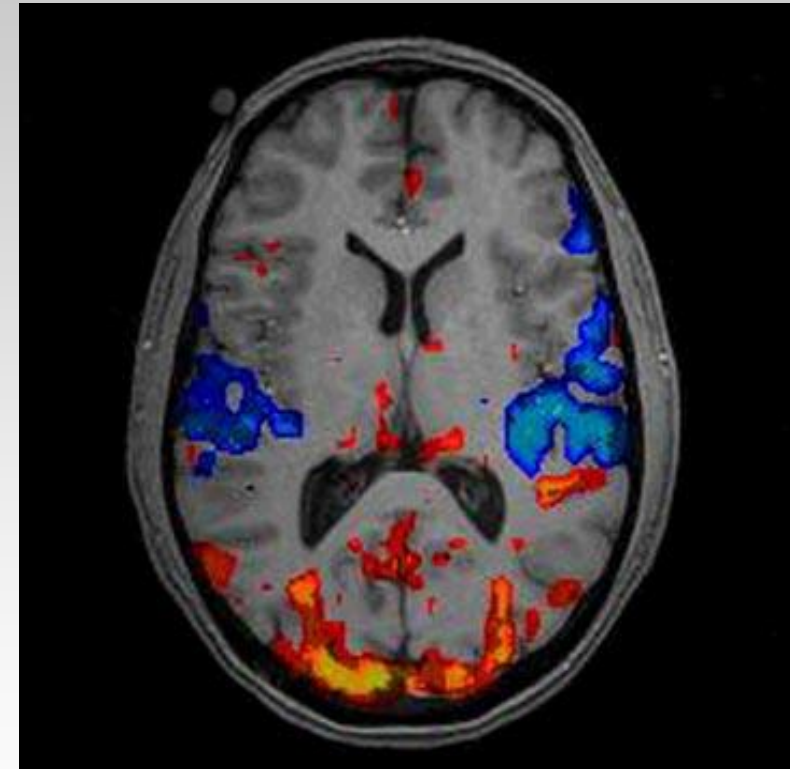
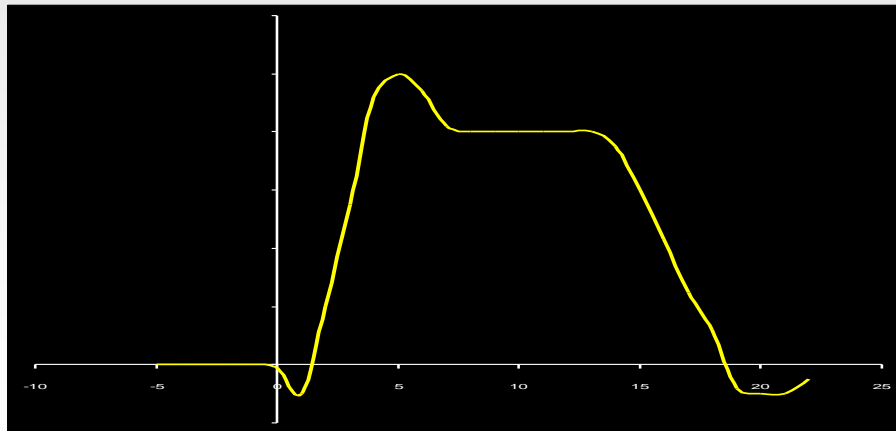


Funkcjonalny rezonans magnetyczny fMRI



Spoczynek

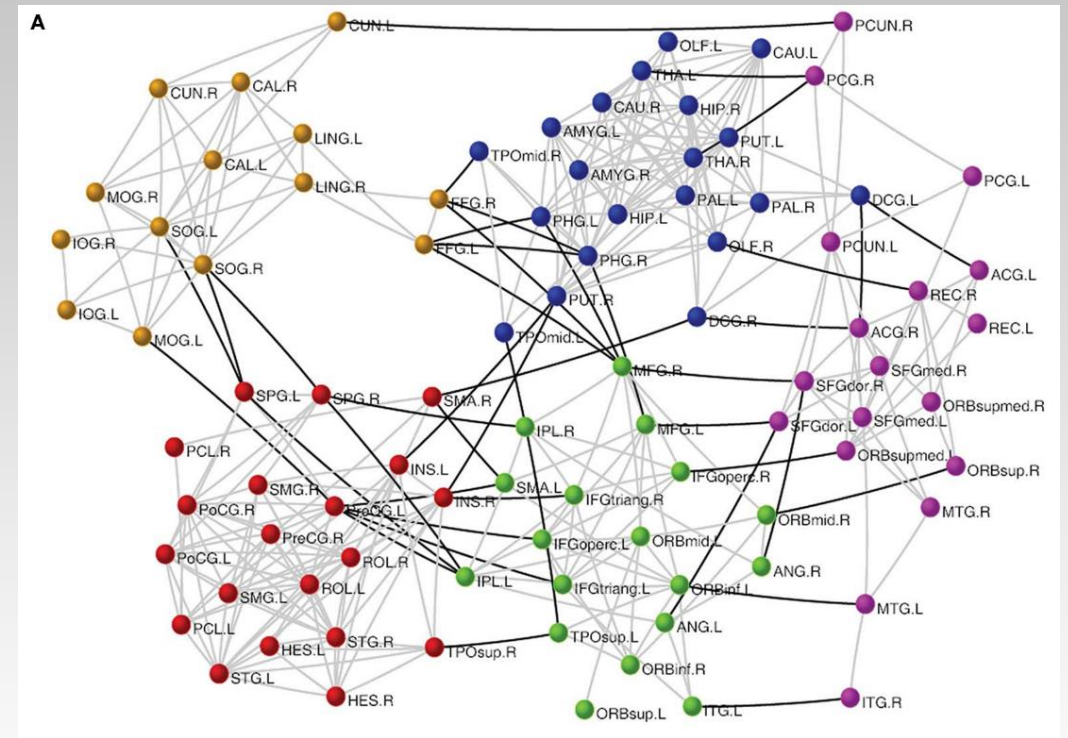
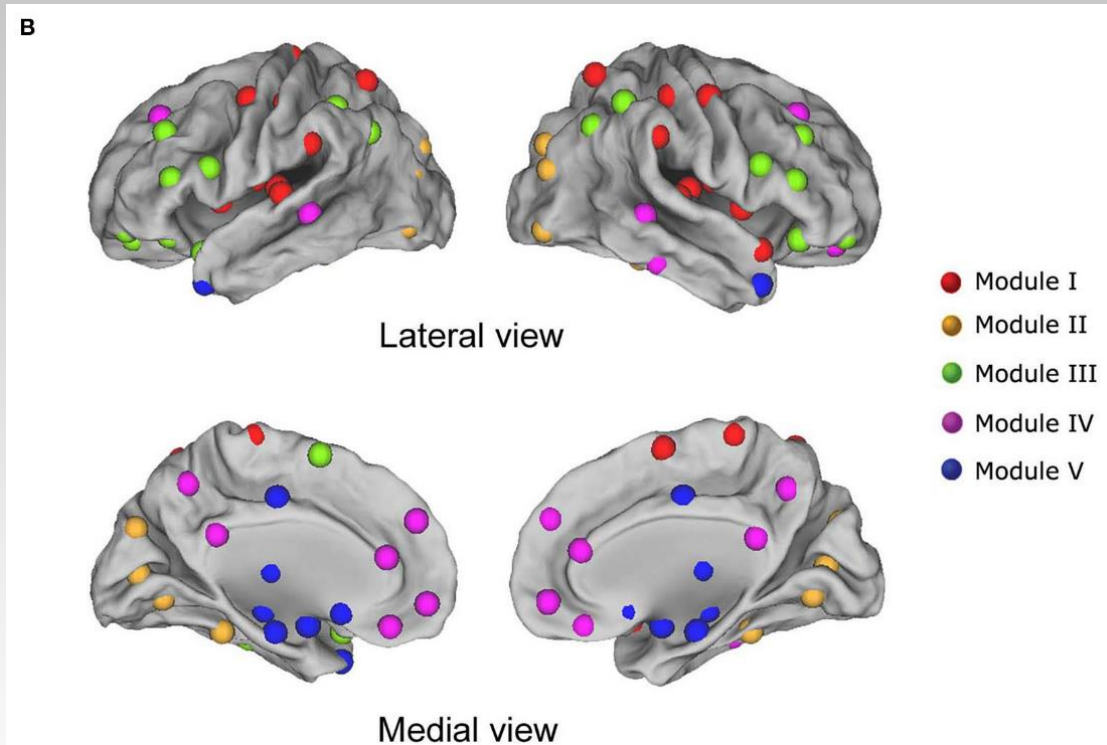
Aktywacja

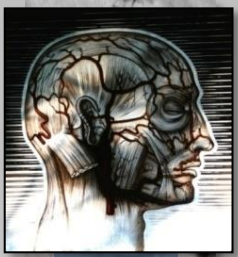


<http://www.magnet.fsu.edu/education/tutorials/magnetacademy/mri/fullarticle.html>

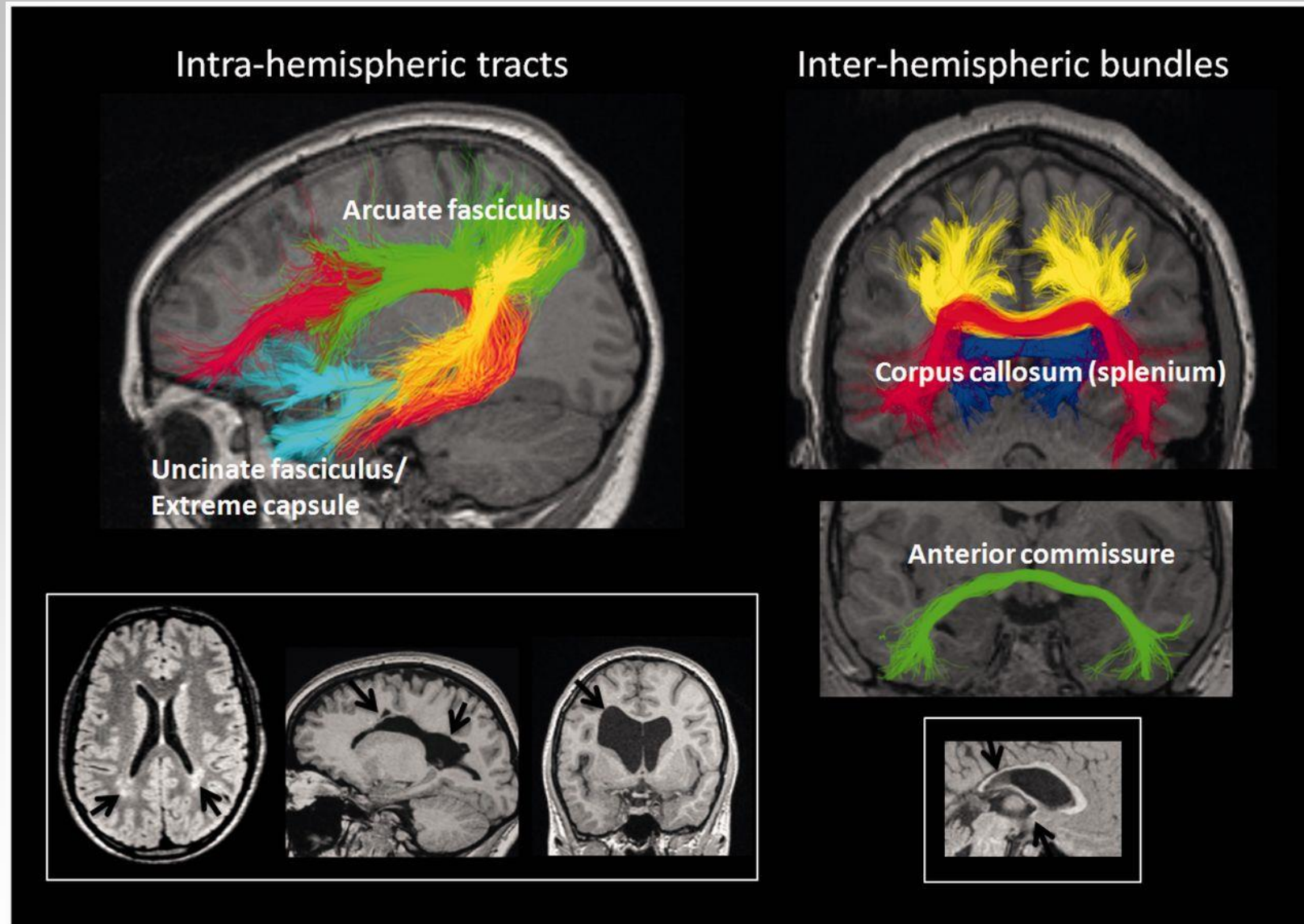


Resting state fMRI – badanie co razem „faluje”

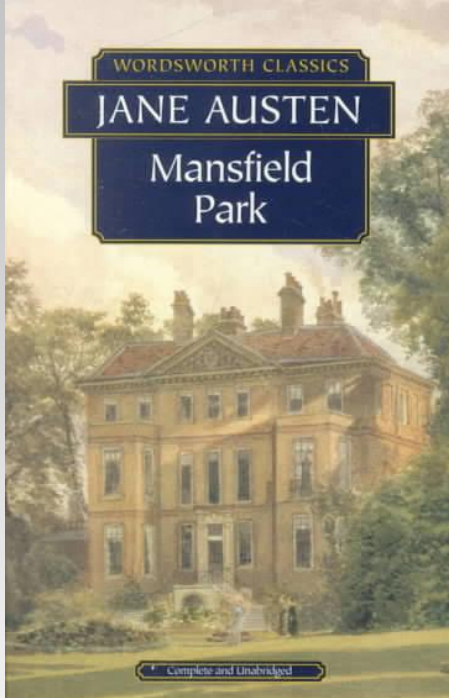
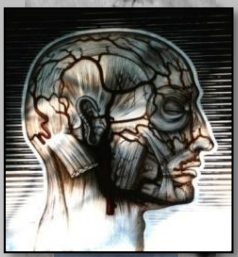




DTI Obrazowanie tensora dyfuzji (fizyczne połączenia)

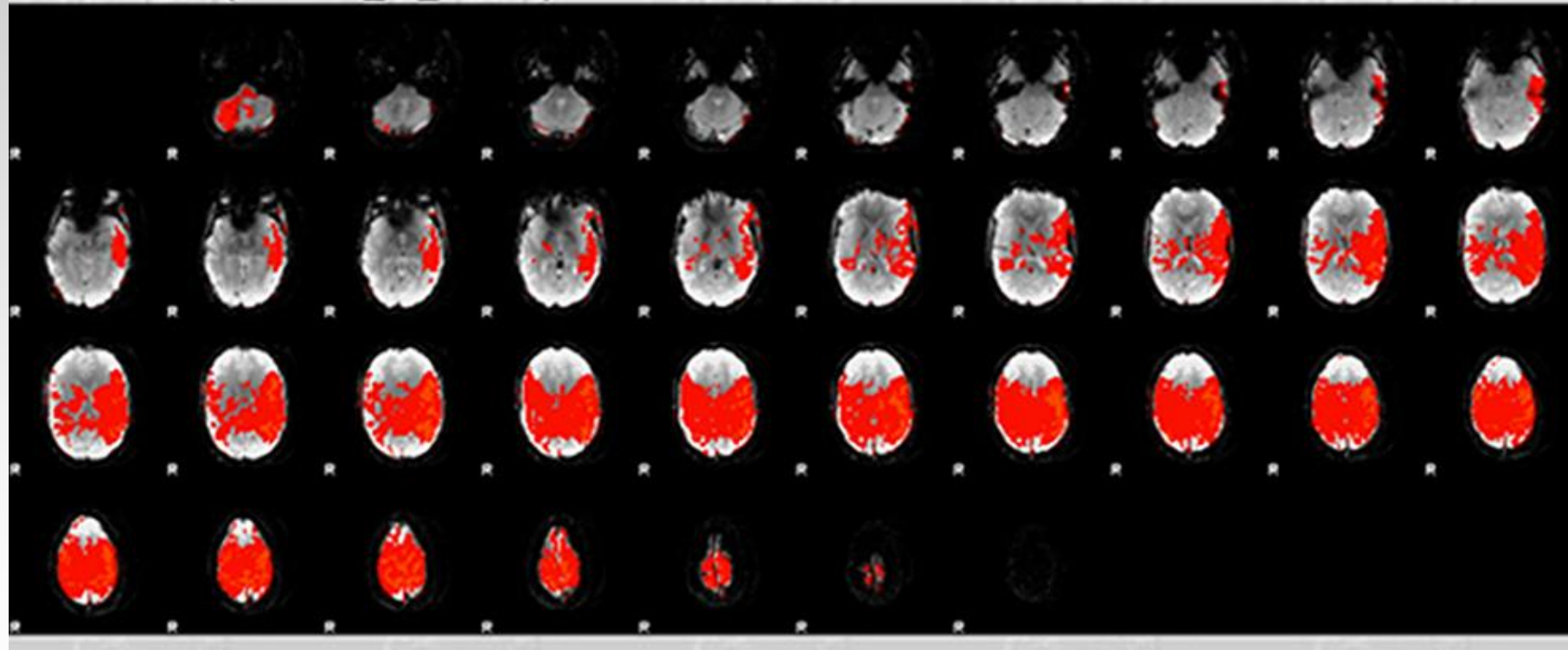


Czytanie z uwagą - zatopienie się w lekturze

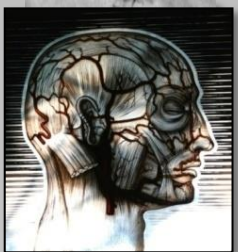


books.google.com

Thresholded activation images 2.3  24.6
zstat1 - C1 (attentive_vs_normal)

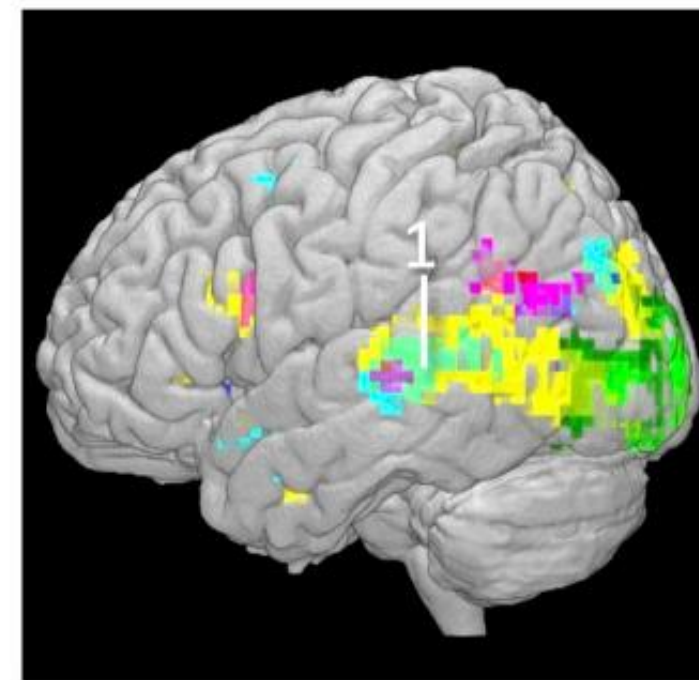
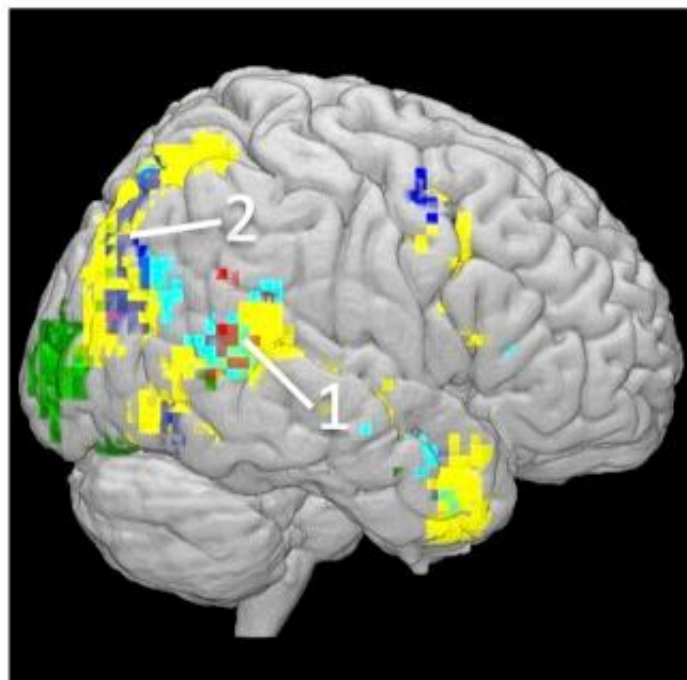
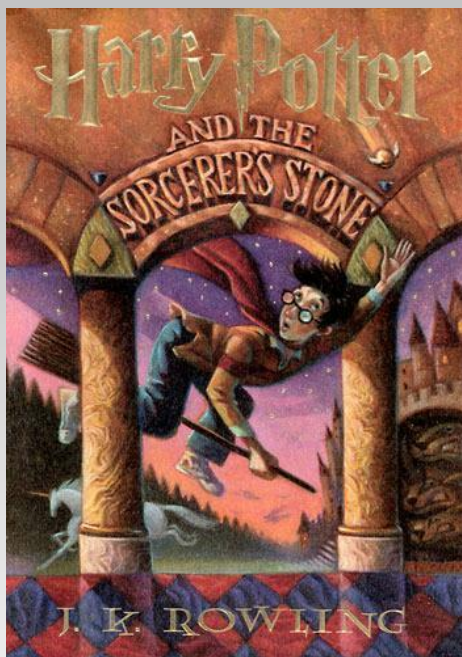


<https://msutoday.msu.edu/news/2012/reading-the-classics-its-more-than-just-for-fun/>
<https://news.stanford.edu/news/2012/september/austen-reading-fmri-090712.html>



Czytanie aktywuje mózg – potwierdzone komputerowo

2014



Characters

Syntax

Semantics

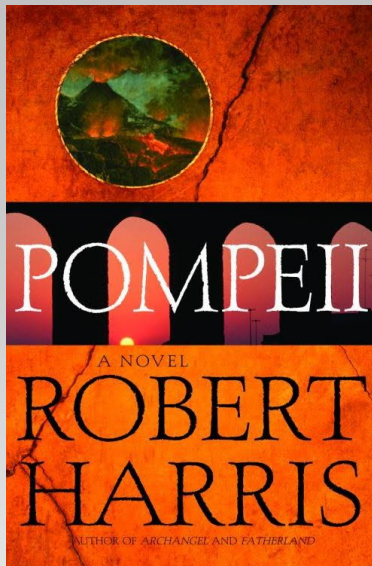
Visual

Dialog

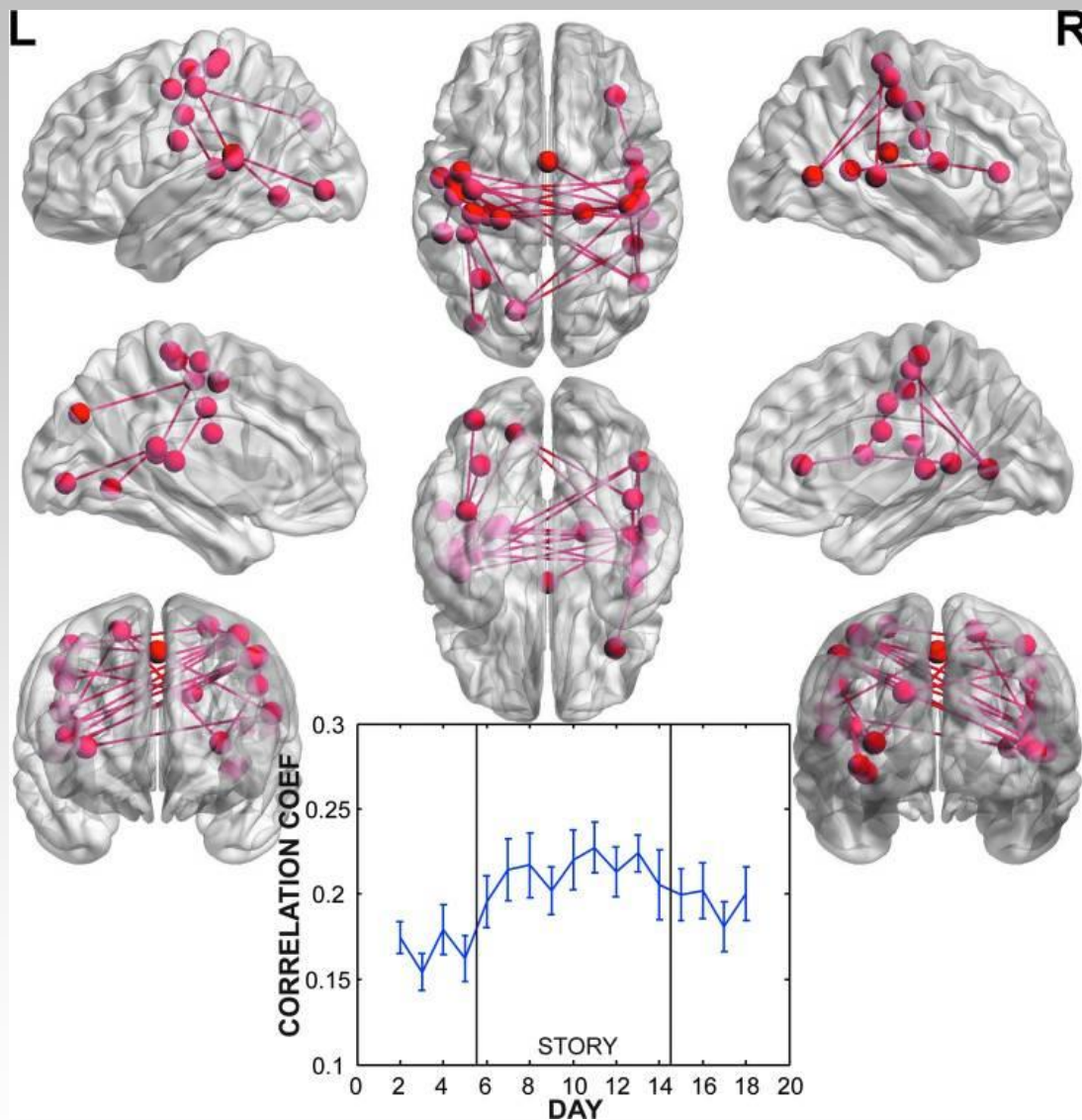
Motion

Wehbe L, Murphy B, Talukdar P, Fyshe A, Ramdas A, Mitchell T. Simultaneously uncovering the patterns of brain regions involved in different story reading subprocesses. PLoS One. 2014 Nov 26;9(11) <https://www.ncbi.nlm.nih.gov/pubmed/25426840>
<https://blogs.scientificamerican.com/mind-guest-blog/how-our-brains-process-books/>

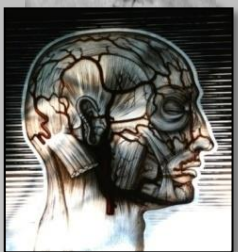
Czytanie buduje wirtualne sieci w naszym mózgu



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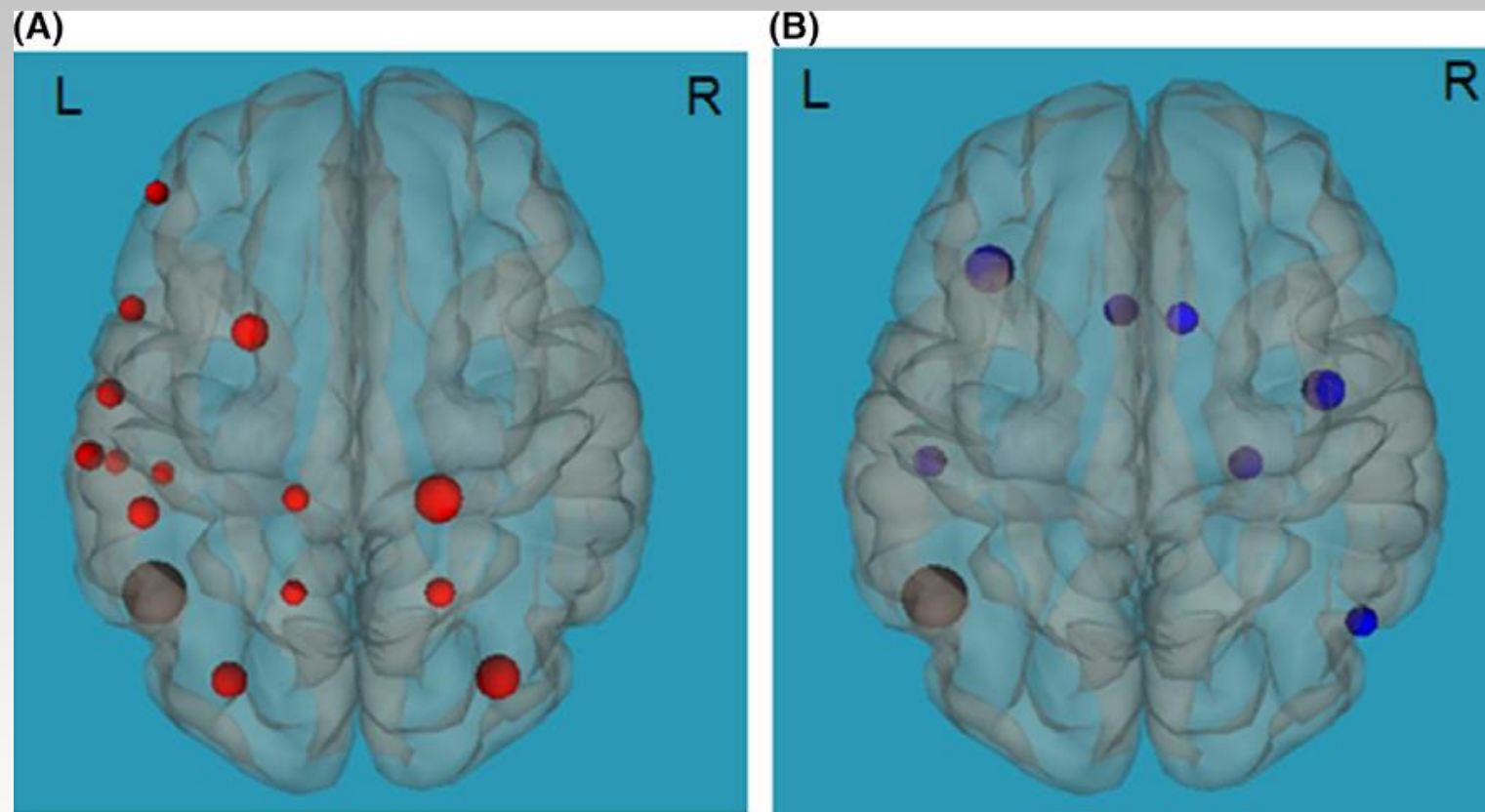


Berns GS, Blaine K, Prietula MJ, Pye BE. Short- and long-term effects of a novel on connectivity in the brain. *Brain Connect.* 2013;3(6):590-600. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3868356/>



Czytanie książek zwiększa funkcjonalne połączenia w mózgu dzieci – „ekrany” je osłabiają

2018



Czytanie

„Ekrany”

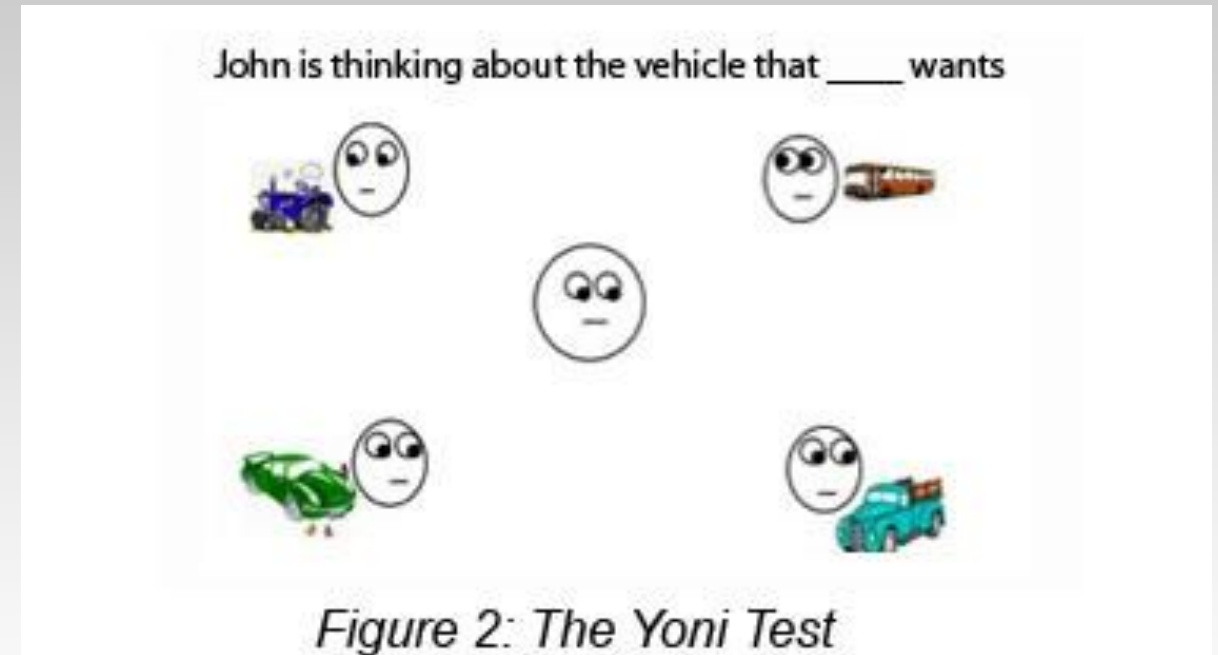
Horowitz-Kraus T, Hutton JS. Brain connectivity in children is increased by the time they spend reading books and decreased by the length of exposure to screen-based media. *Acta Paediatr.* 2018 Apr;107(4):685-693.

<https://www.ncbi.nlm.nih.gov/pubmed/29215151>

Czytanie beletrystyki rozwija teorię umysłu „ToM”

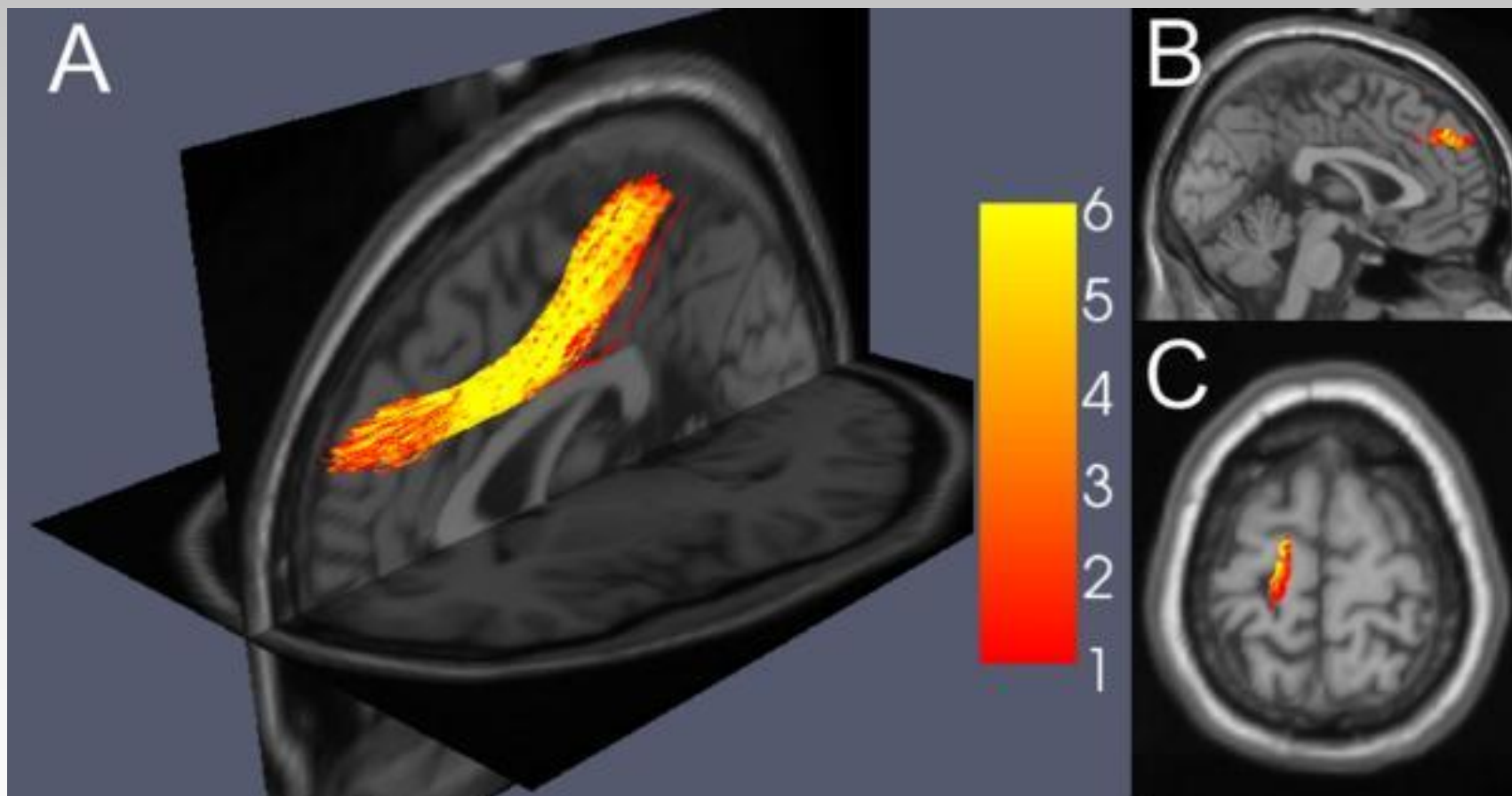


Figure 1: Reading the Mind in the Eyes



Kidd DC, Castano E. Reading literary fiction improves theory of mind. *Science*. 2013 Oct 18;342(6156):377-80. doi: 10.1126/science.1239918 <https://www.ncbi.nlm.nih.gov/pubmed/24091705>
<https://www.newschool.edu/pressroom/pressreleases/2013/CastanoKidd.htm>

100 godzin czytania poprawia fizyczne połączenia w mózgu

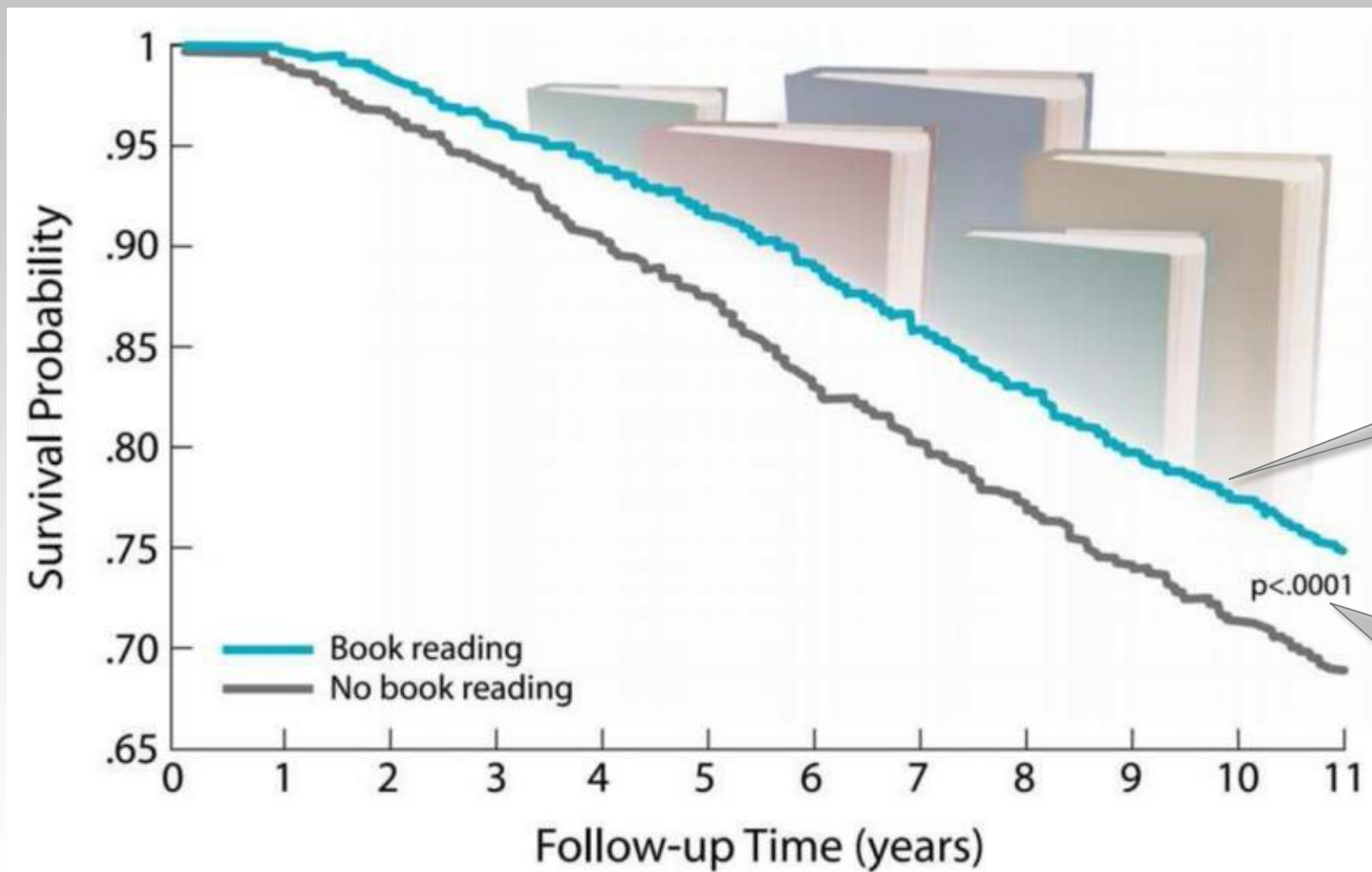


Timothy A. Keller, Marcel Adam Just. Altering Cortical Connectivity: Remediation-Induced Changes in the White Matter of Poor Readers. *Neuron*, 2009; 64 (5): 624-631 DOI: 10.1016/j.neuron.2009.10.018 <https://www.ncbi.nlm.nih.gov/pubmed/20005820>



„A chapter a day: Association of book reading with longevity”

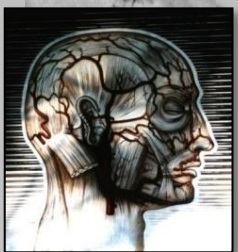
2016



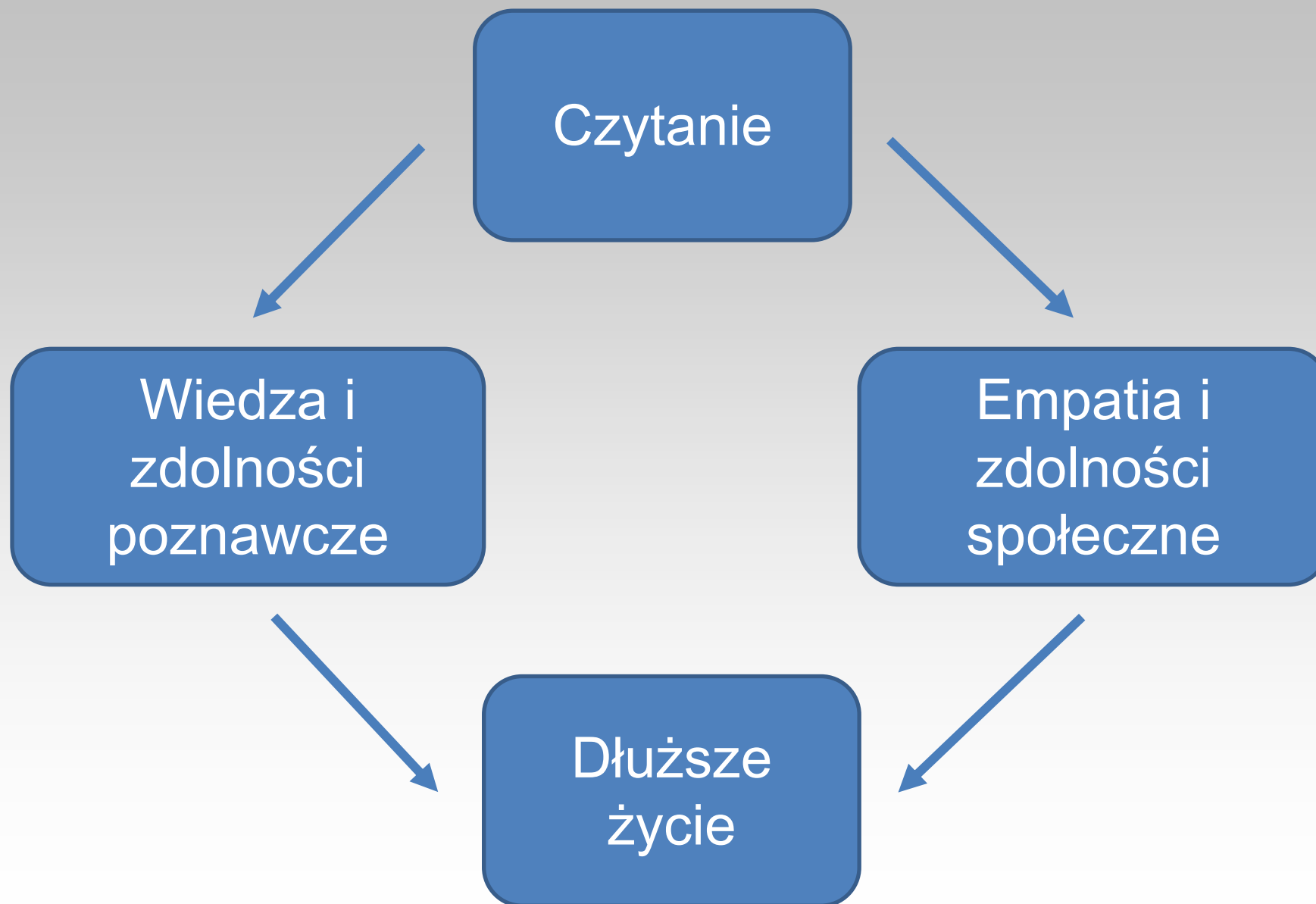
3,5h czytania tygodniowo

23% szans na przeżycie

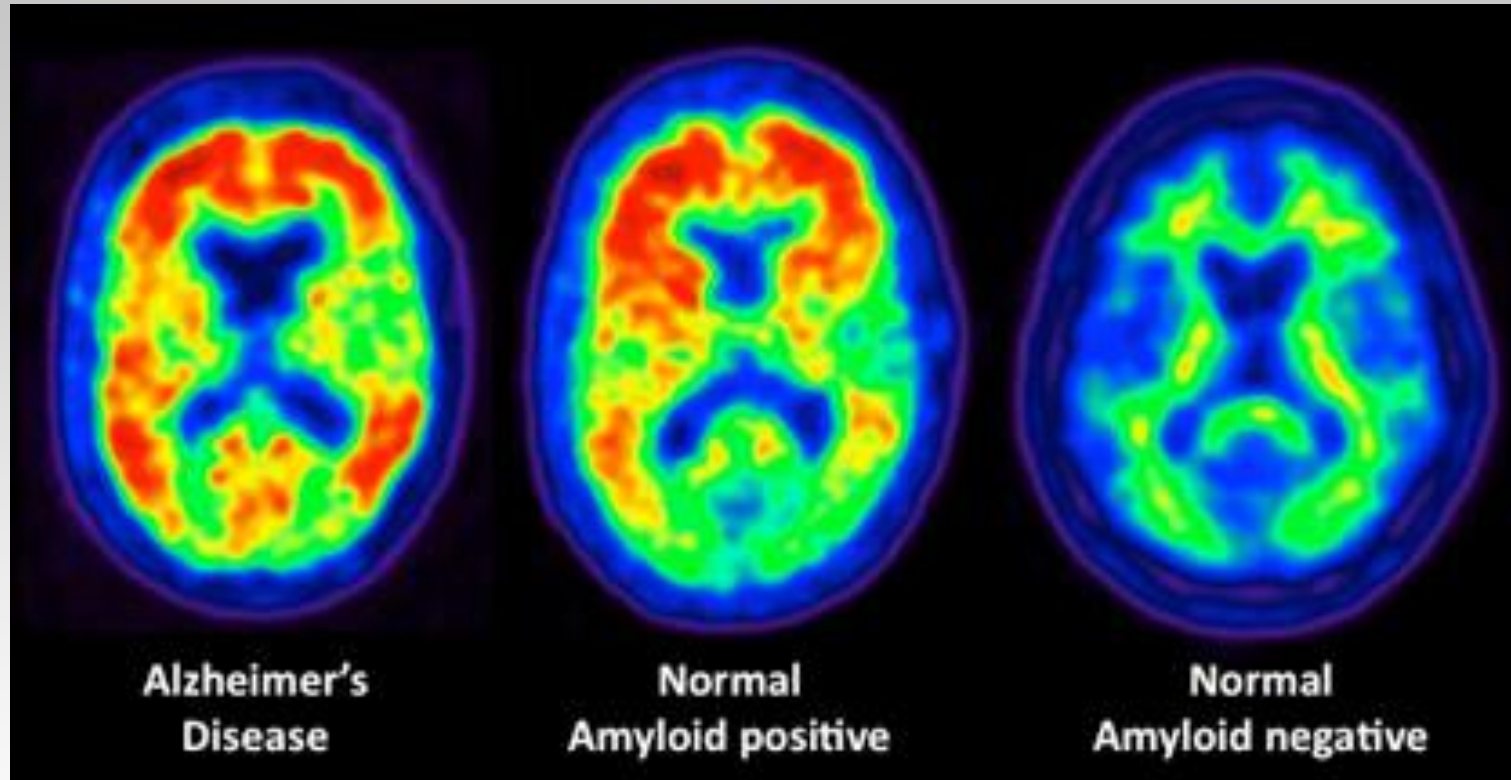
Bavishi A, Slade MD, Levy BR. Soc Sci Med. 2016 Sep;164:44-48. doi: 10.1016/j.socscimed.2016.07.014. <https://www.ncbi.nlm.nih.gov/pubmed/27471129>



„A chapter a day: Association of book reading with longevity”



Czytanie książek opóźnia chorobę Alzheimera



PET scans reveal amyloid plaques

Wilson RS, Boyle PA, Yu L, Barnes LL, Schneider JA, Bennett DA. Life-span cognitive activity, neuropathologic burden, and cognitive aging. *Neurology*. 2013 Jul 23;81(4):314-21 <https://www.ncbi.nlm.nih.gov/pubmed/?term=23825173>

<http://news.berkeley.edu/2012/01/23/engaged-brain-amyloid-alzheimers/>



Umysł na książkach mózg natłogowego czytacza

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p.boguszewski@nencki.gov.pl

