Biology of Brain and Behavior

Lecture 4 – how to look for neurosci info, neurons and neuronal communication (visual system)

Introduction

→ We are right in the middle! (of time and space)

→So far we have covered aspects of neuroscience that were less focused on during the lectures: neuroscientific methods and experiments

→Today we will:

- →Cover „looking for neurosci info” homework that you will have
- →Conduct a short „we are neurons” experiment
- →Refresh and discuss neurons and neuronal communication

Homework

→ Each of you will have to find 2 studies (scientific papers) on some topic and post the topic along with links to studies on github (by Friday!)

→From all these studies I will pick one that all of you will have to read (by Saturday) and which we will discuss on our next meeting

→I started showing you last time how to do it, today I will show you more, along with how to generally read a neuroscientific paper

Resources

→ For general information:

→Wikipedia

→Scholarpedia

→Review papers

→ For more specific things:

→Science daily

→Neuroscience news

Resources

→ Looking for papers:

→Google scholar

→Science Direct

→Pubmed

Selecting and reading the paper

→ Have a look at the abstract first to get the overview

→Introduction will help you understand the broader context of the study – what we do and do not know and why we would like to know what the study tries to tell us

→Introduction is a useful tool for looking for important papers in the specific field

→Discussion gathers up study results into something meaningful – interprets what the data in this and other studies tell us

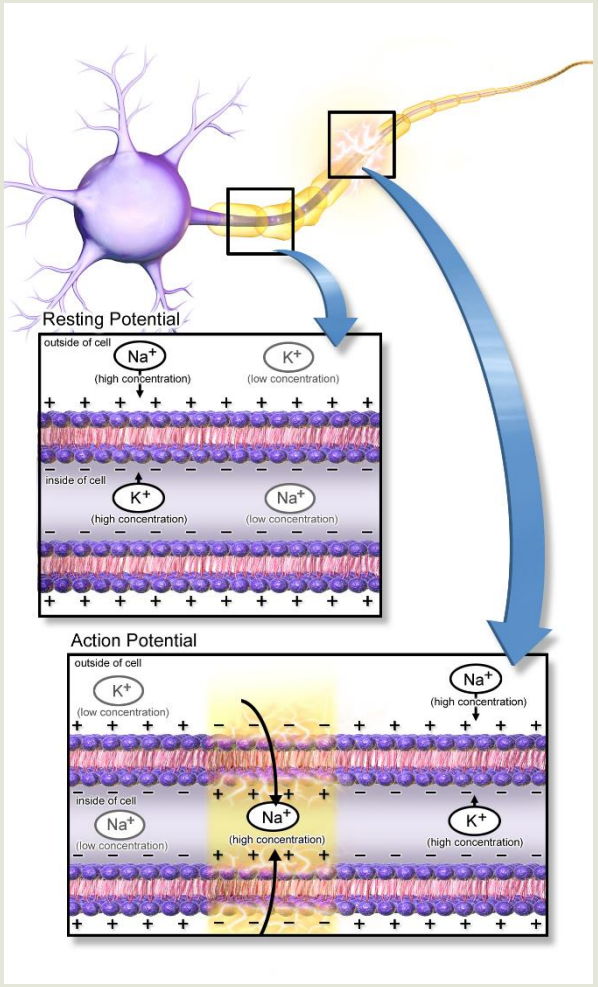
DEMO

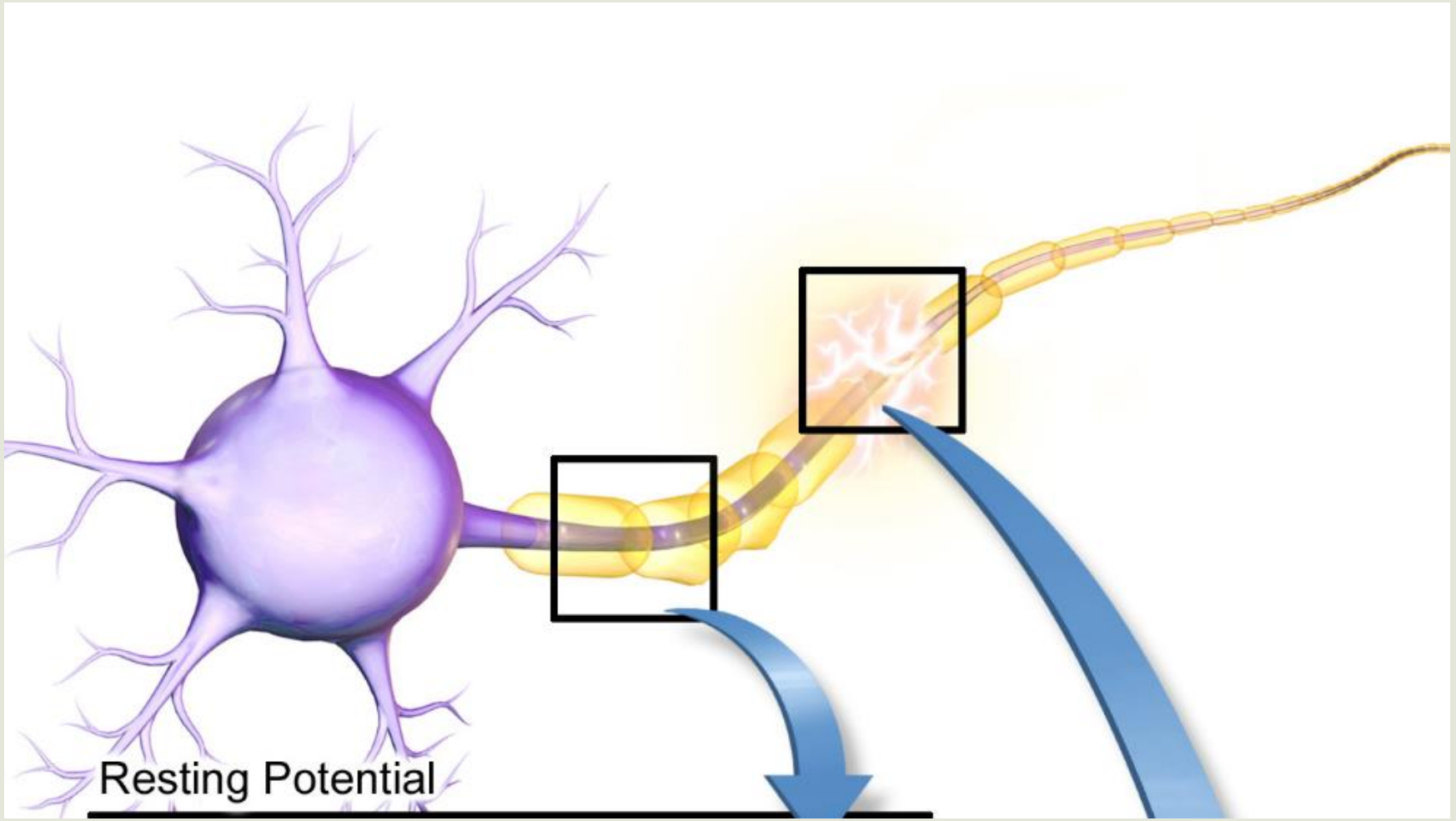
Let’s go hunting for papers! ☺

„We are neurons”

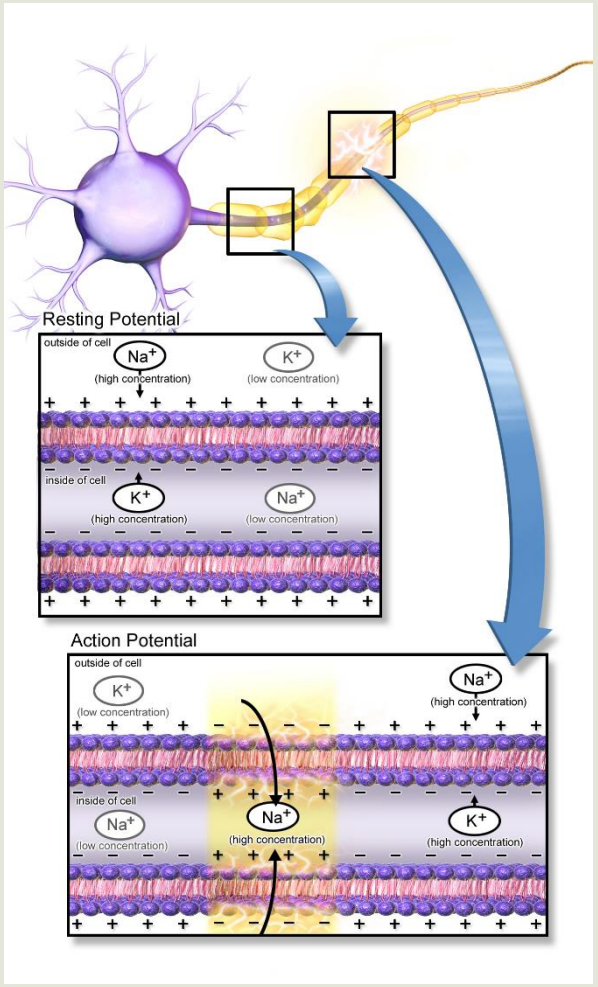
→ Psychologically speaking – we are built from neurons
→ Neurons pass information between each other – they are arranged into whole networks
→ We will too – we’ll arrange ourselves into a circular network and see how fast a simple impulse travels through such network
→We have already covered basics of science in neuro-field, so we will approach like scientists do – we will measure and test

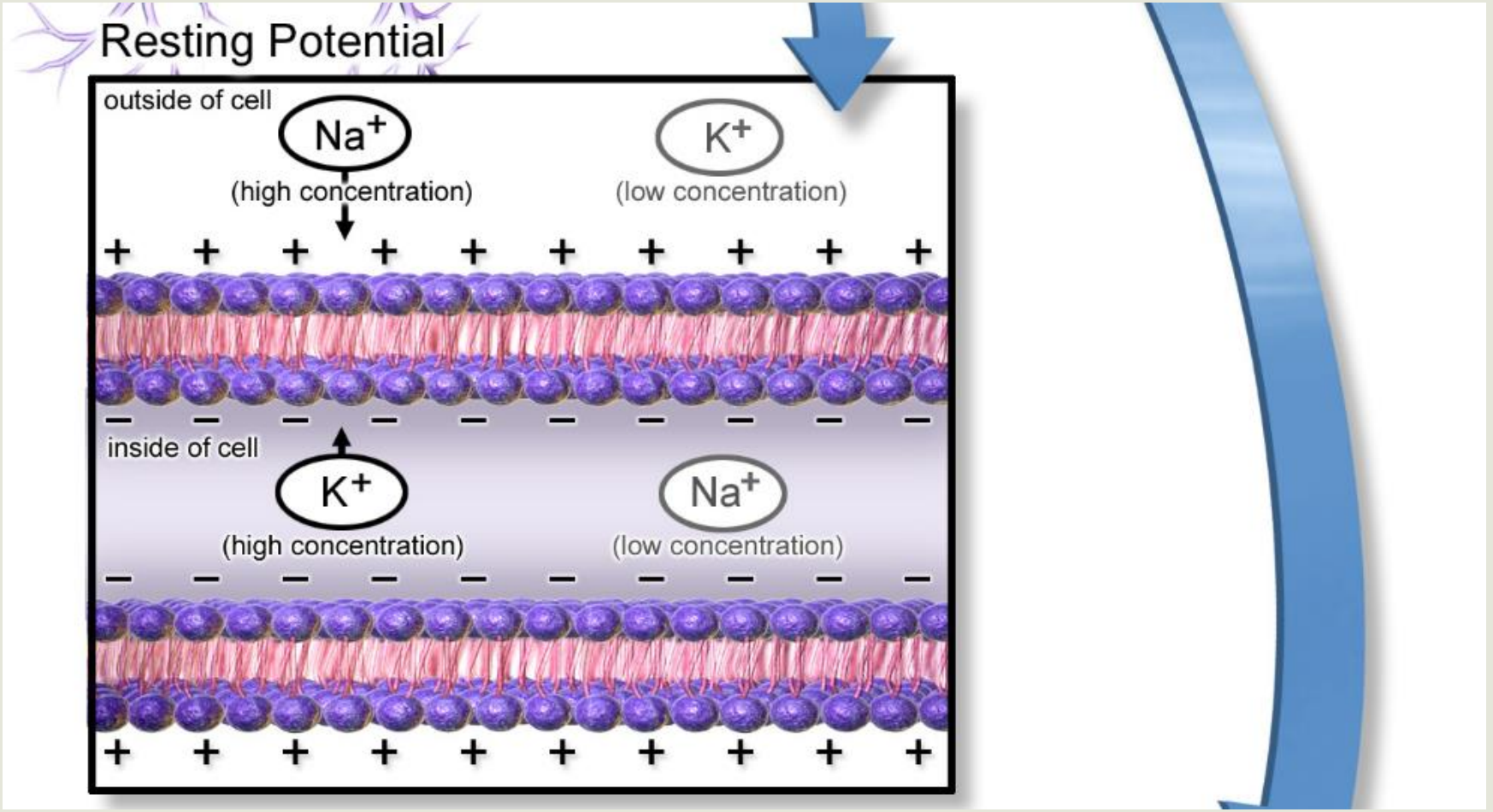
Neurons and neural communication



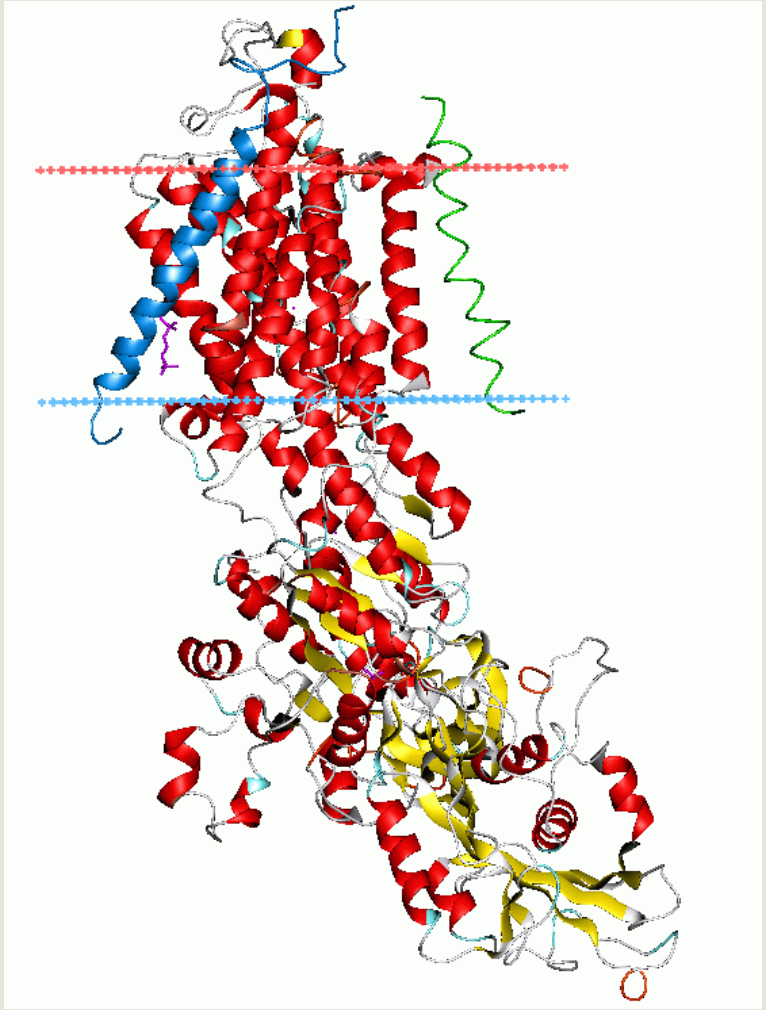


Neurons and neural communication

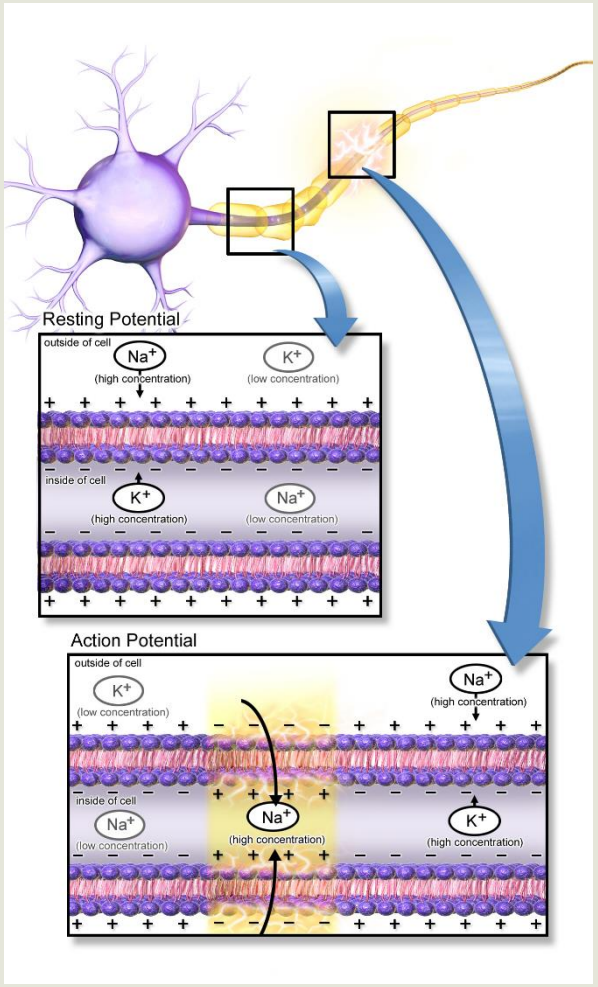


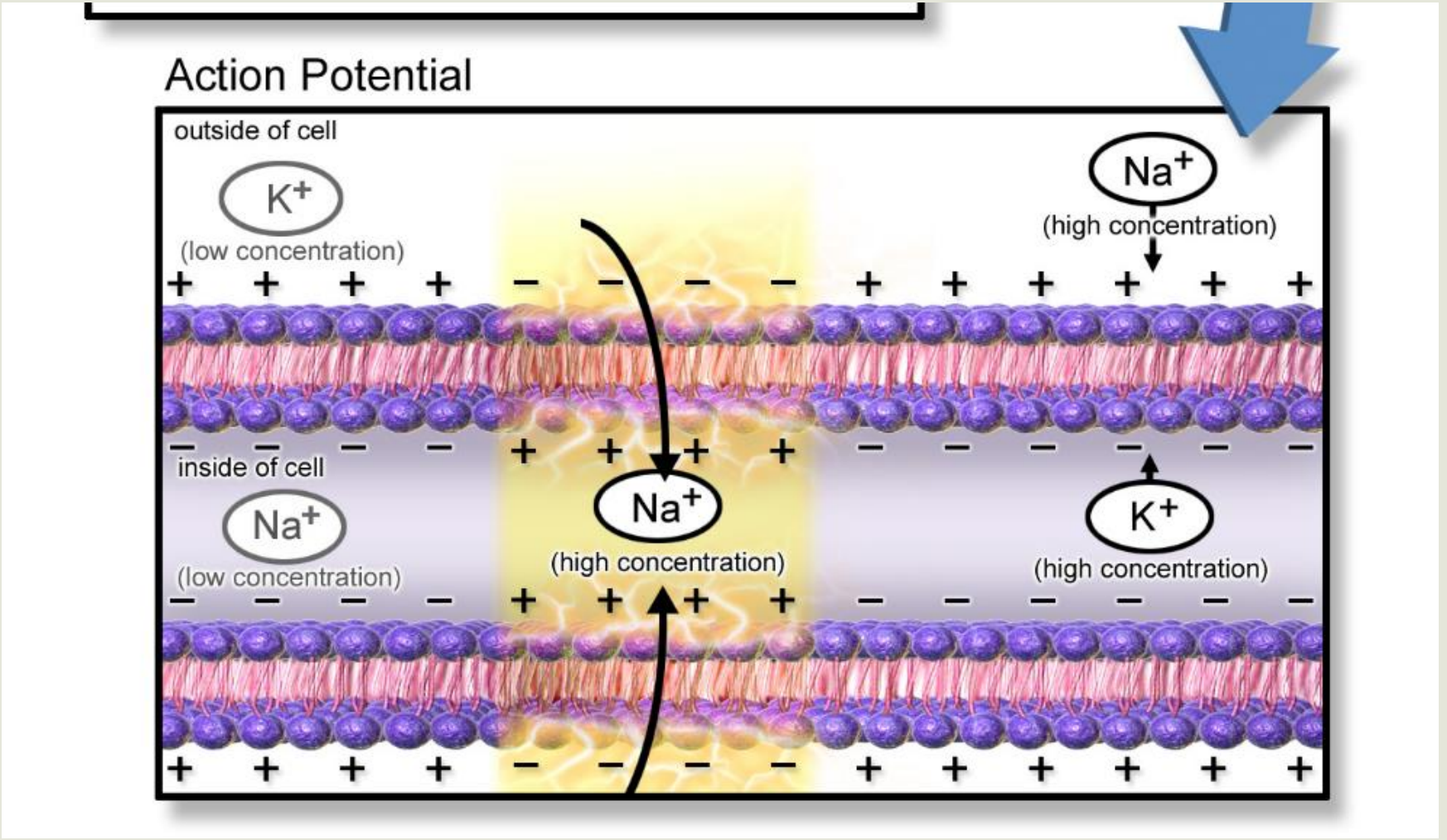


Neurons and neural communication

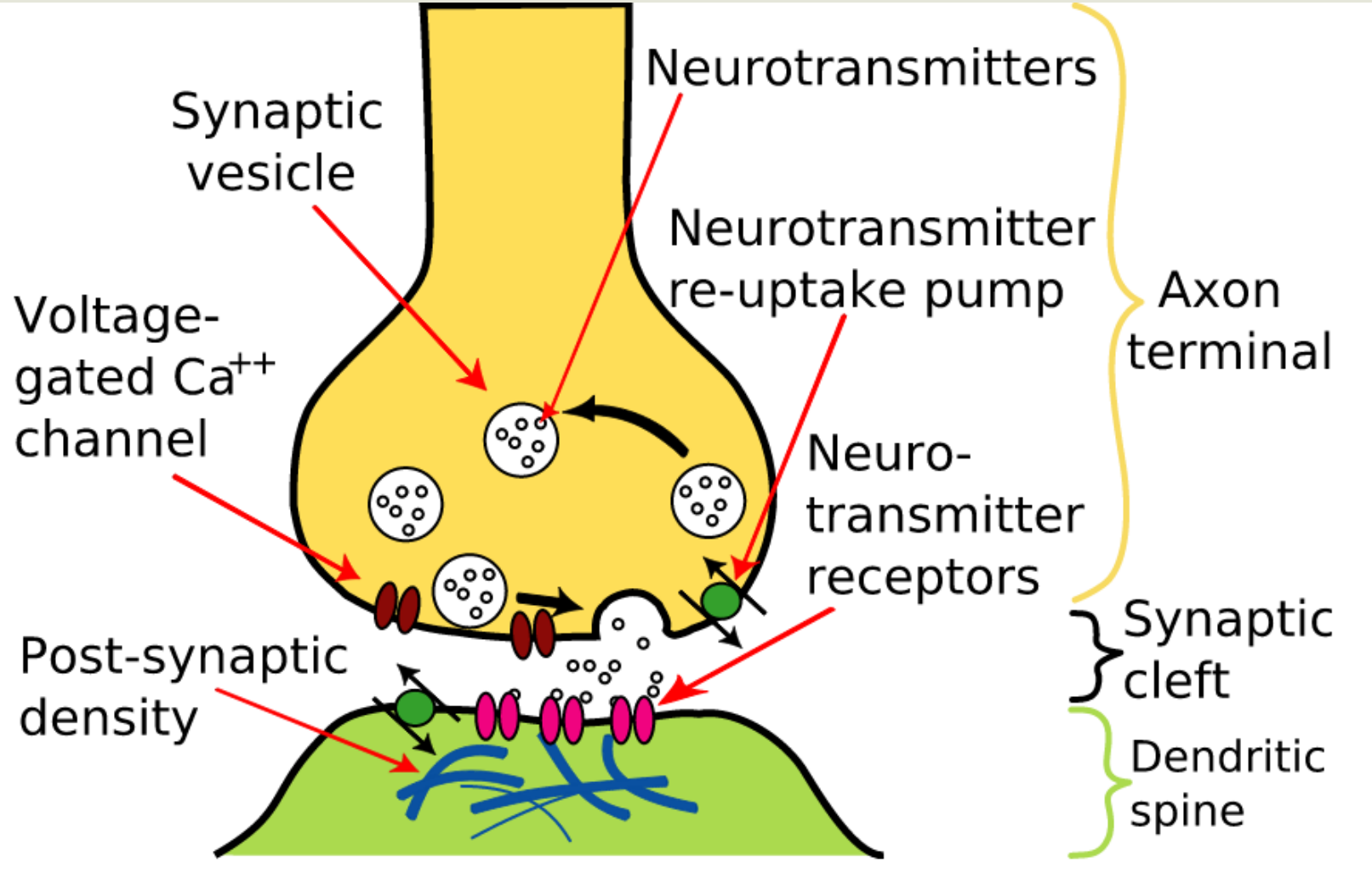


Neurons and neural communication

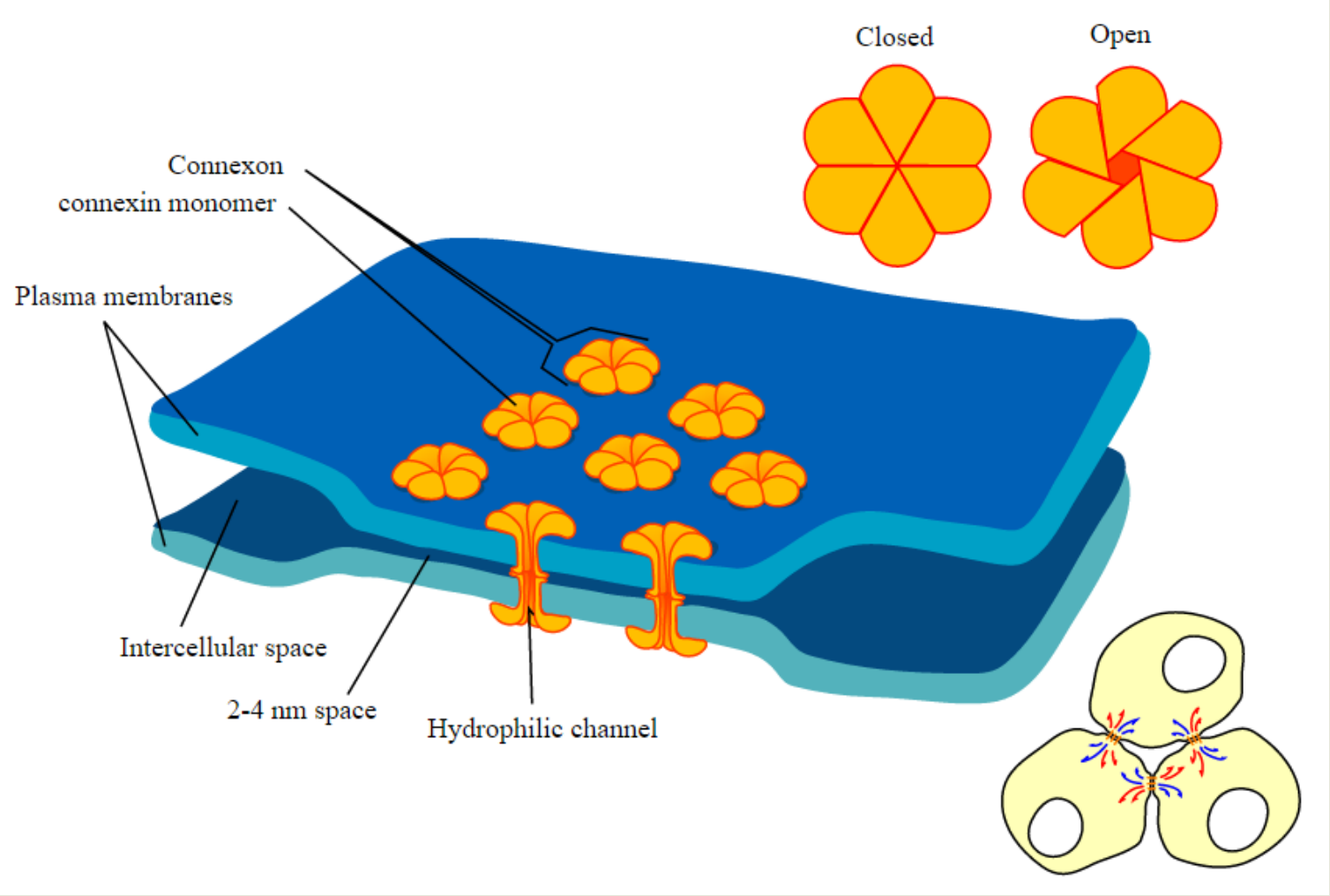


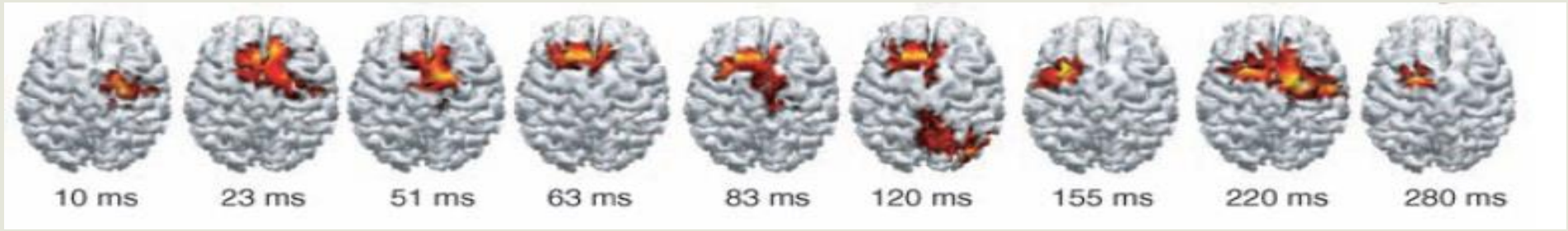


Neurons and neural communication



Neurons and neural communication

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23 ms
51 ms
63 ms
83 ms
120 ms
155 ms
220 ms
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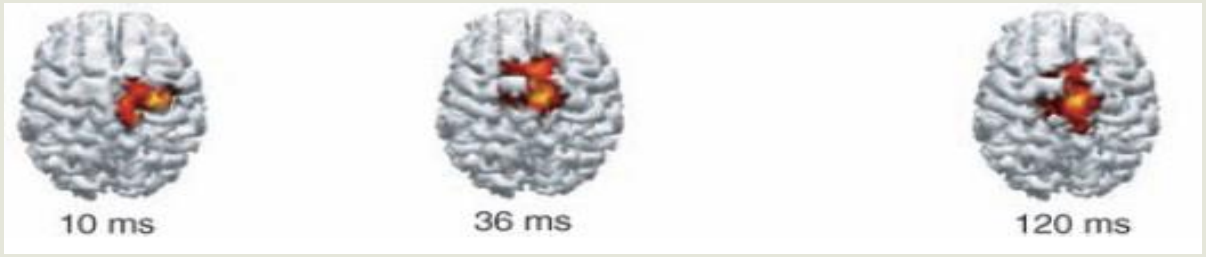
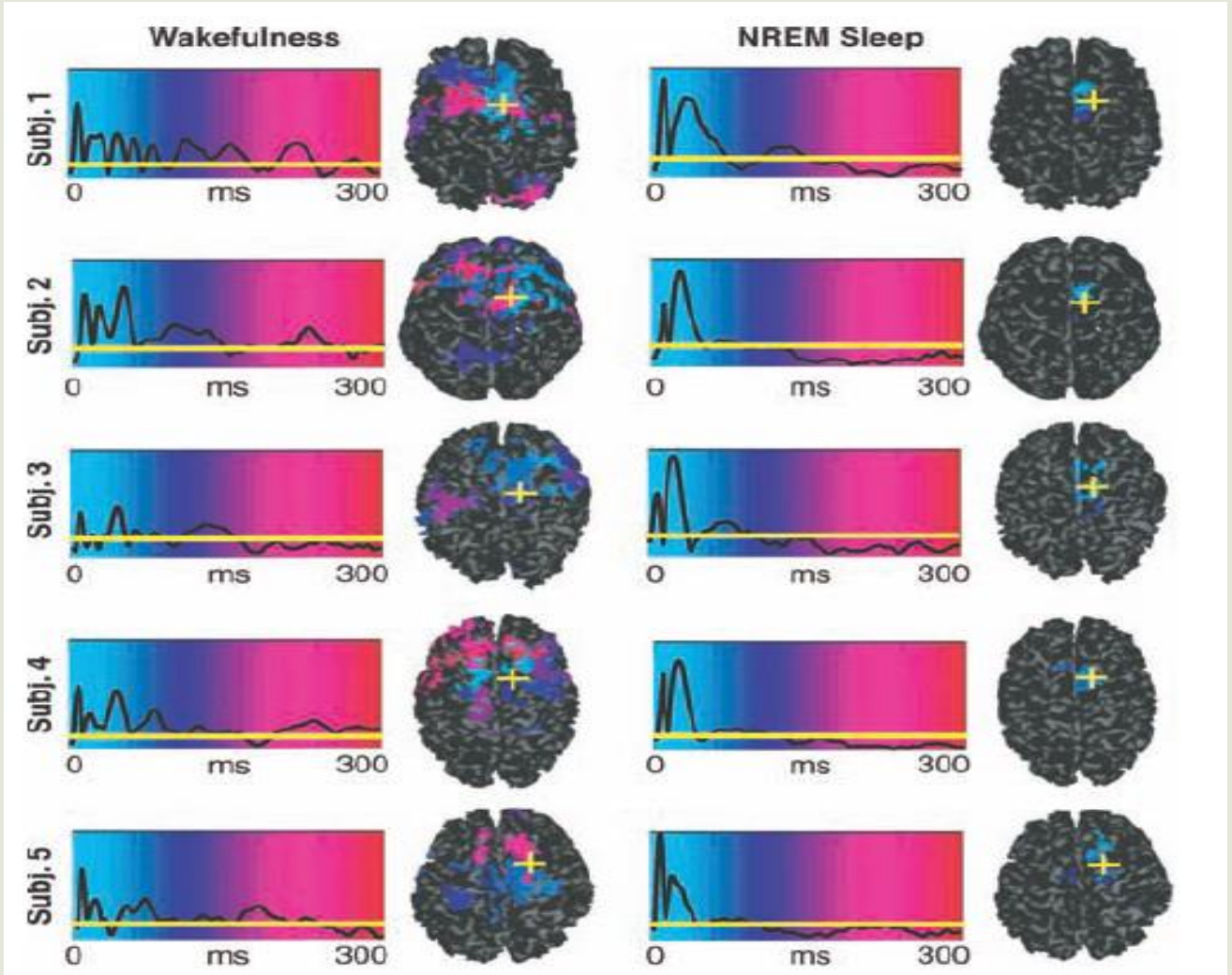
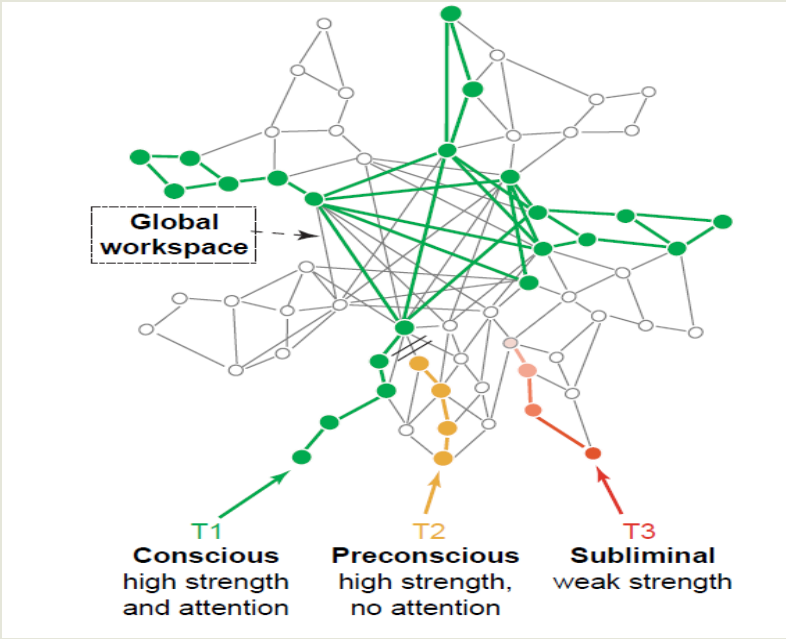

10 ms
36 ms
120 ms


Wakefulness
NREM Sleep
Subj. 1
Subj. 2
Subj. 3
Subj. 4
Subj. 5
0
ms
300


Global workspace
T1
Conscious
high strength
and attention
T2
Preconscious
high strength,
no attention
T3
Subliminal
weak strength