

# Visualising the interaction of proteins in biological membranes for diagnosis of diseases.



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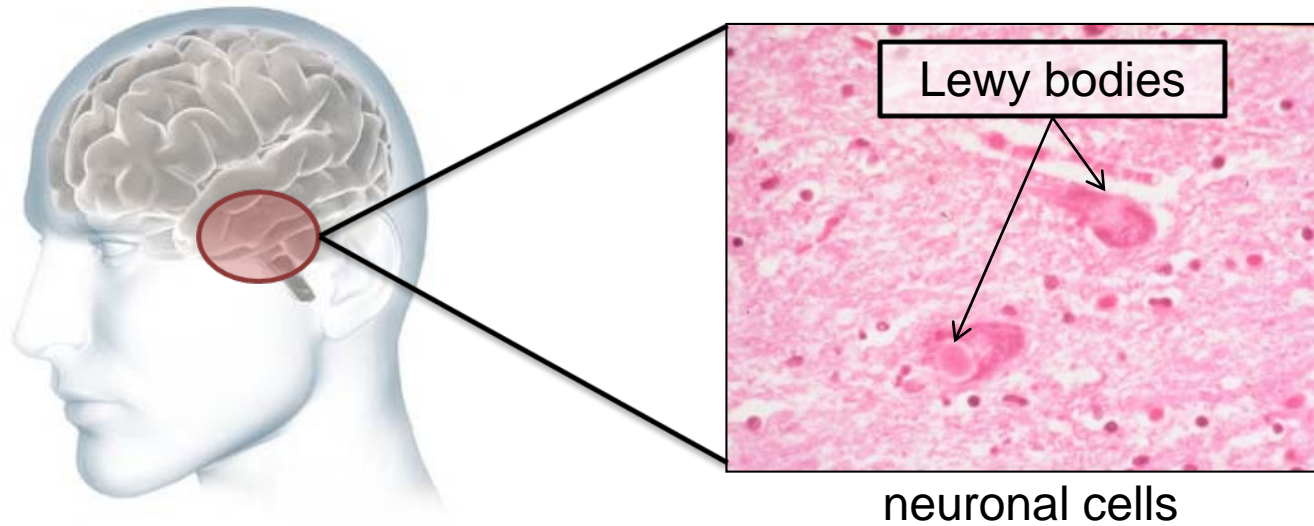


substantia nigra



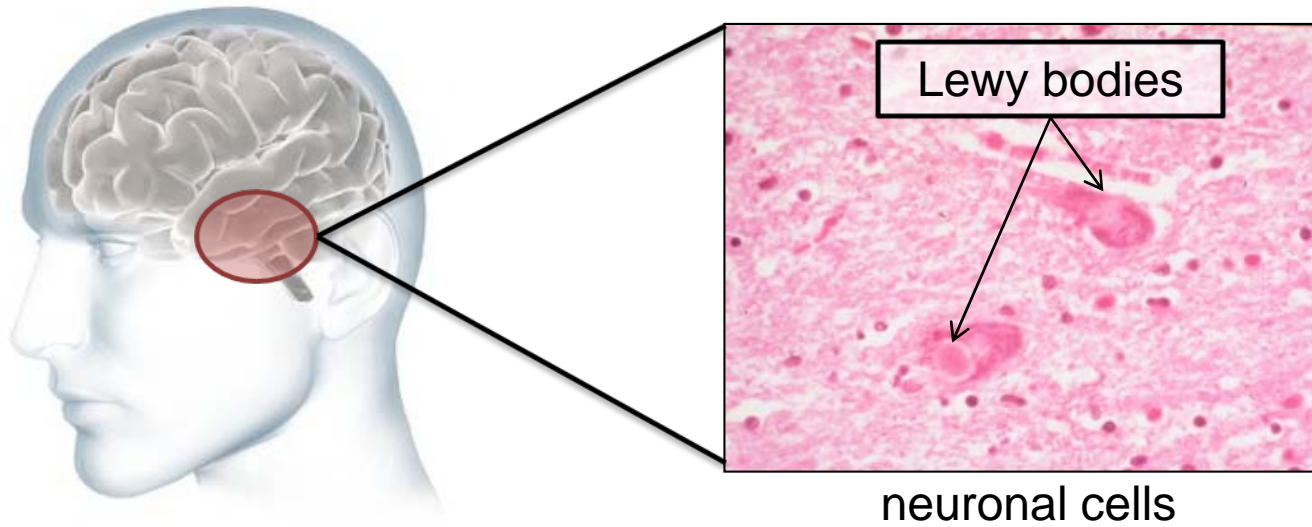
Parkinson's disease is caused by the loss of neuronal cells in the substantia nigra.

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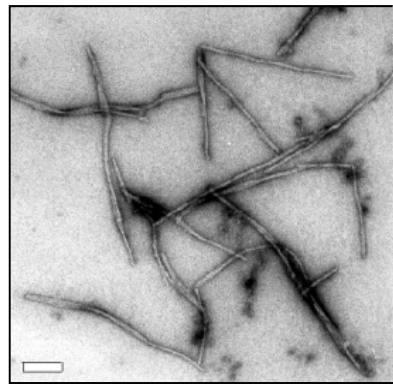
The presence of Lewy bodies in these cells is a key feature of Parkinson's disease.

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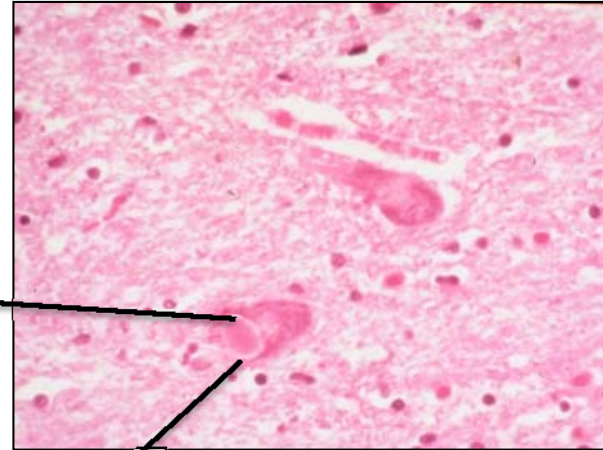


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Lewy bodies are composed of a substance known as Amyloid

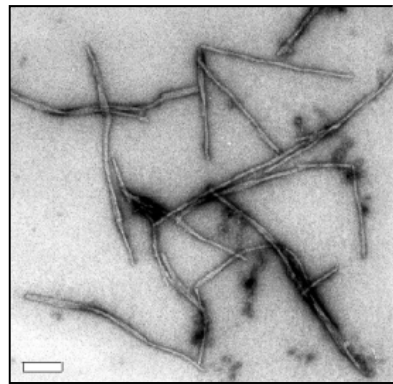


Amyloid

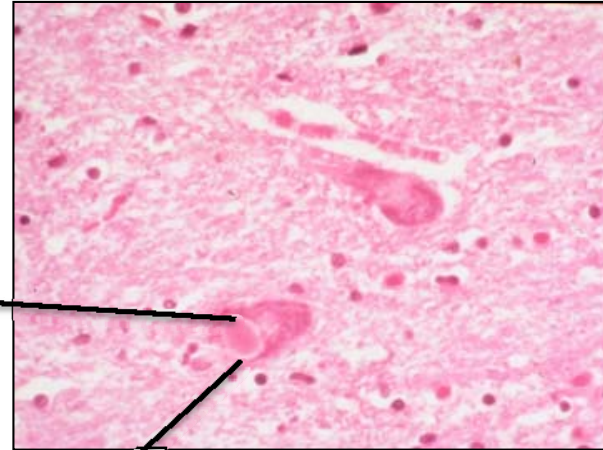


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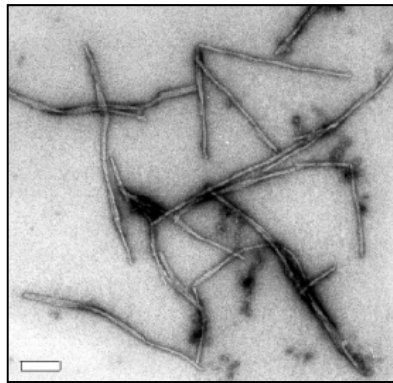


Amyloid

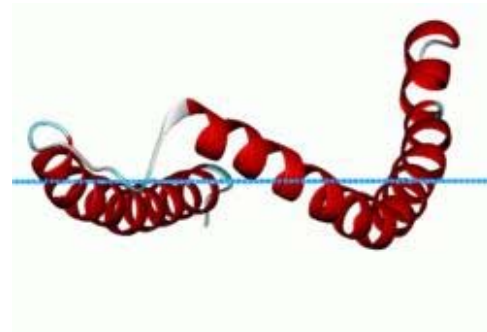


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The amyloid deposits are mostly composed of the protein  $\alpha$ -synuclein



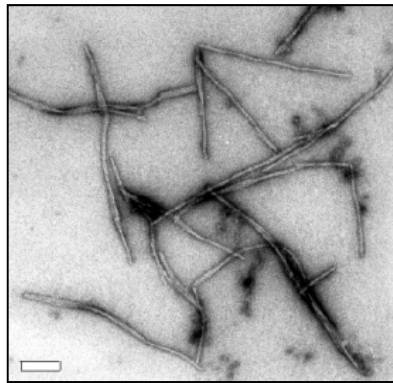
Amyloid



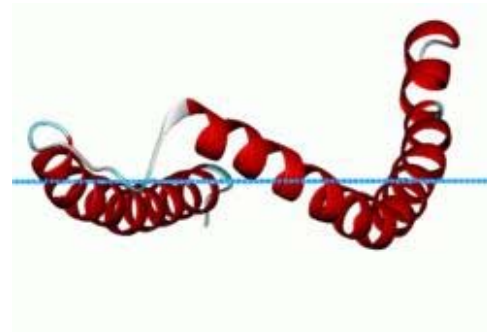
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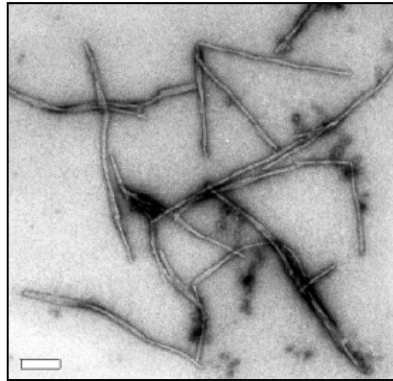
Amyloid



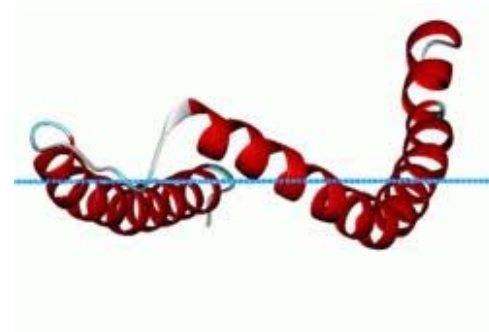
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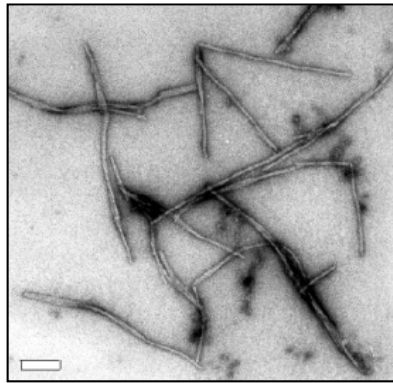
Amyloid



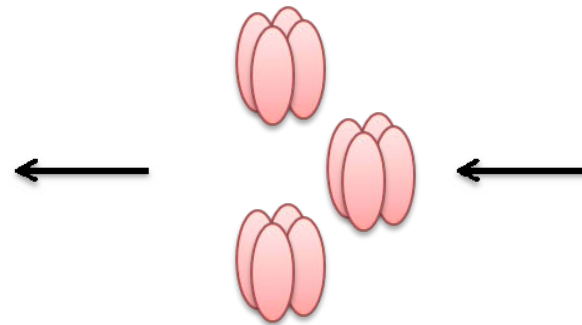
$\alpha$ -synuclein

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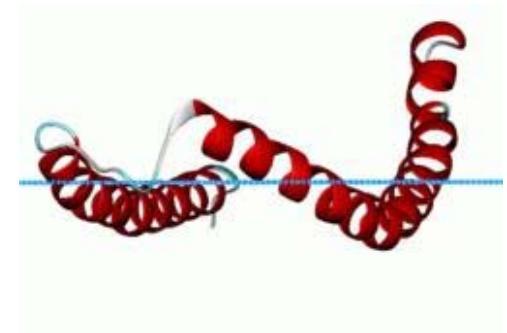
During the formation of Amyloid  $\alpha$ -synuclein forms structures know as oligomers



Amyloid



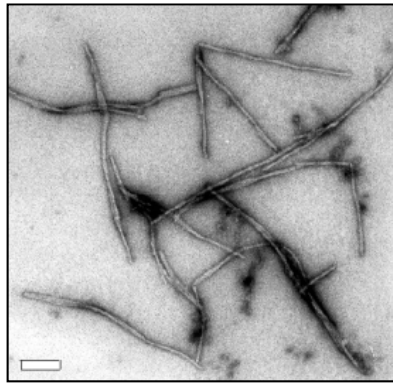
oligomers



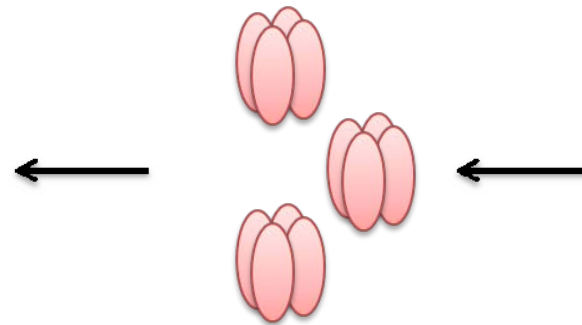
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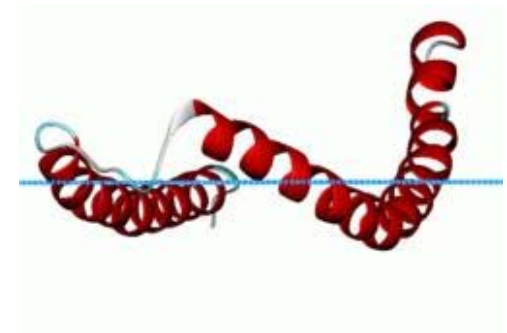
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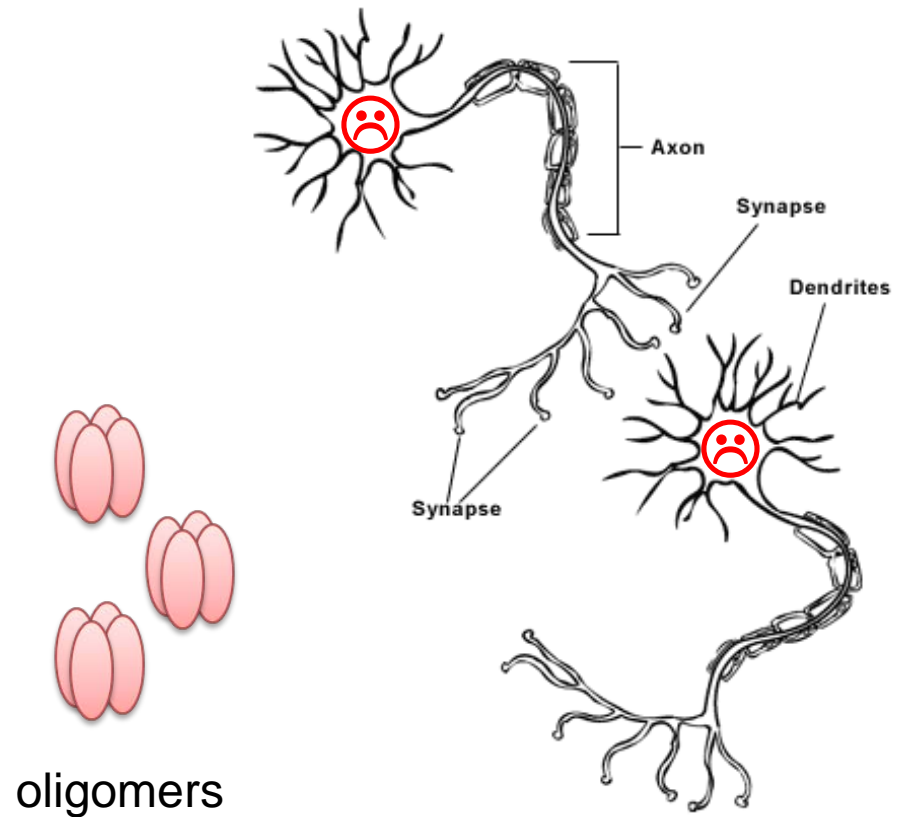
oligomers



$\alpha$ -synuclein

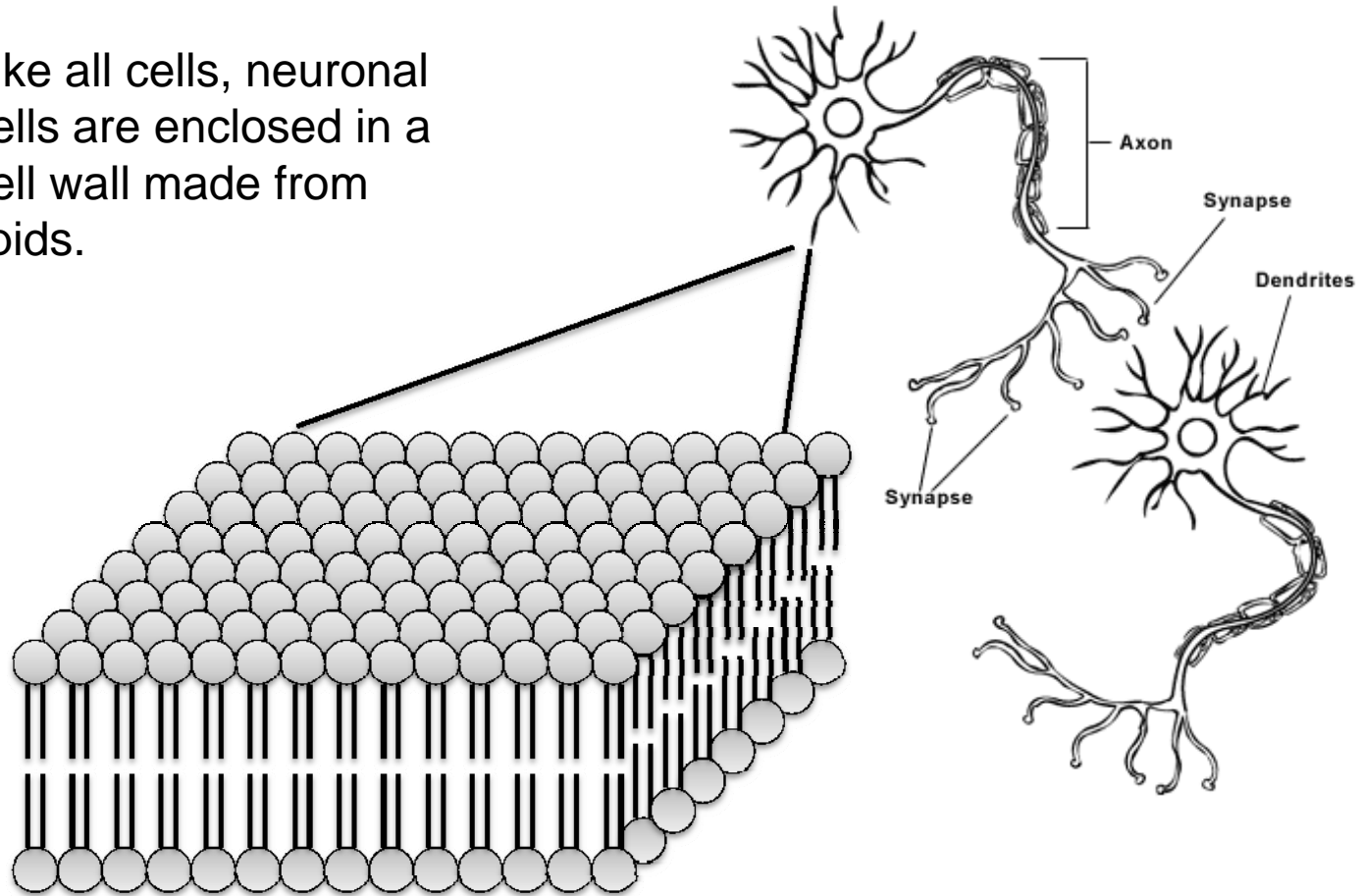
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It is these oligomers that are thought to be responsible for killing the neuronal brain cells

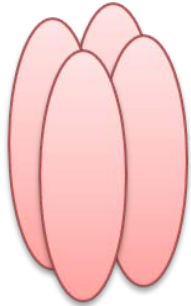


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Like all cells, neuronal cells are enclosed in a cell wall made from lipids.

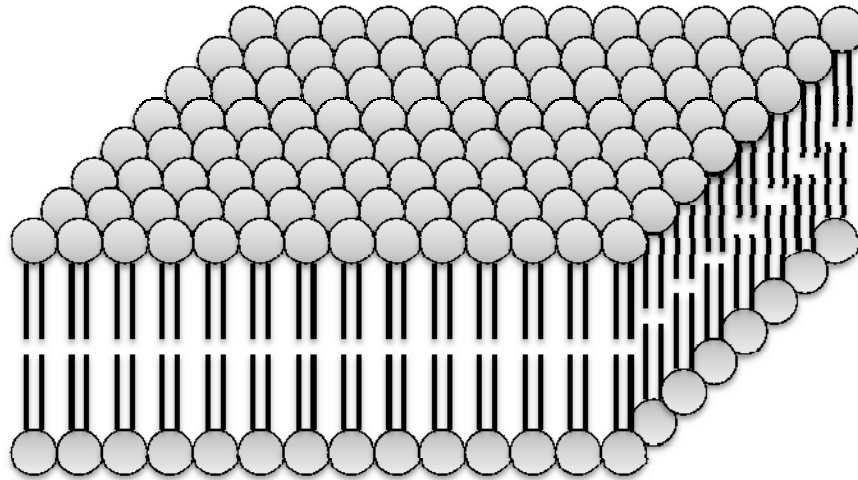


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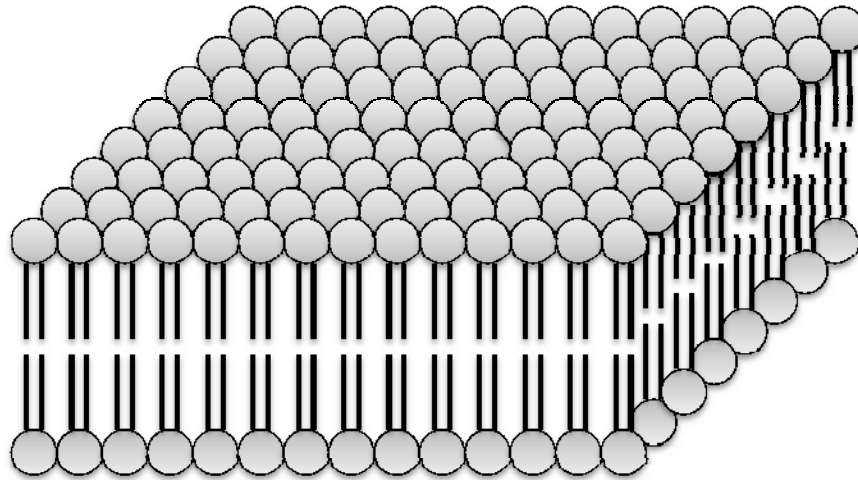
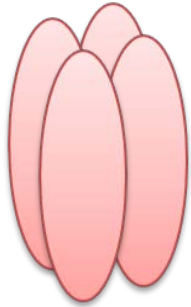


oligomers

oligomers are thought to interact with the cell wall in a number of ways

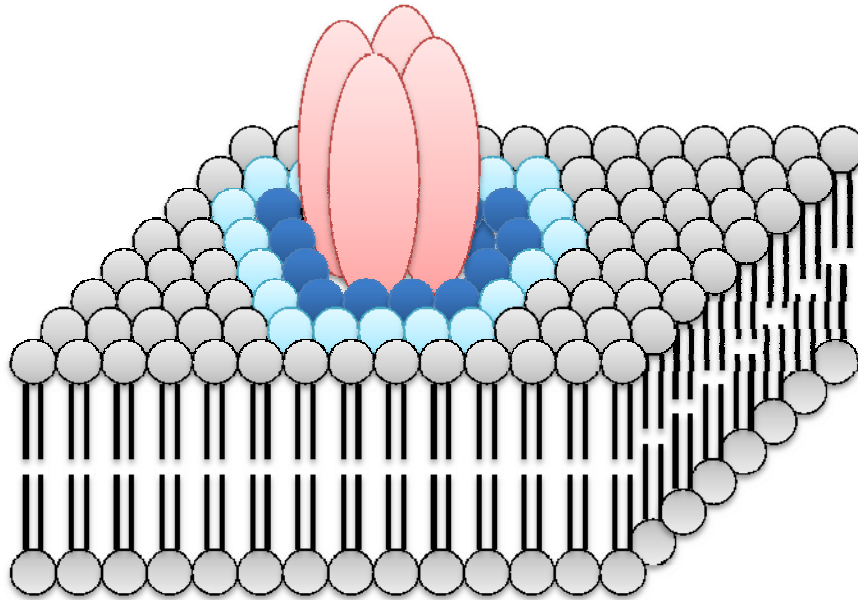


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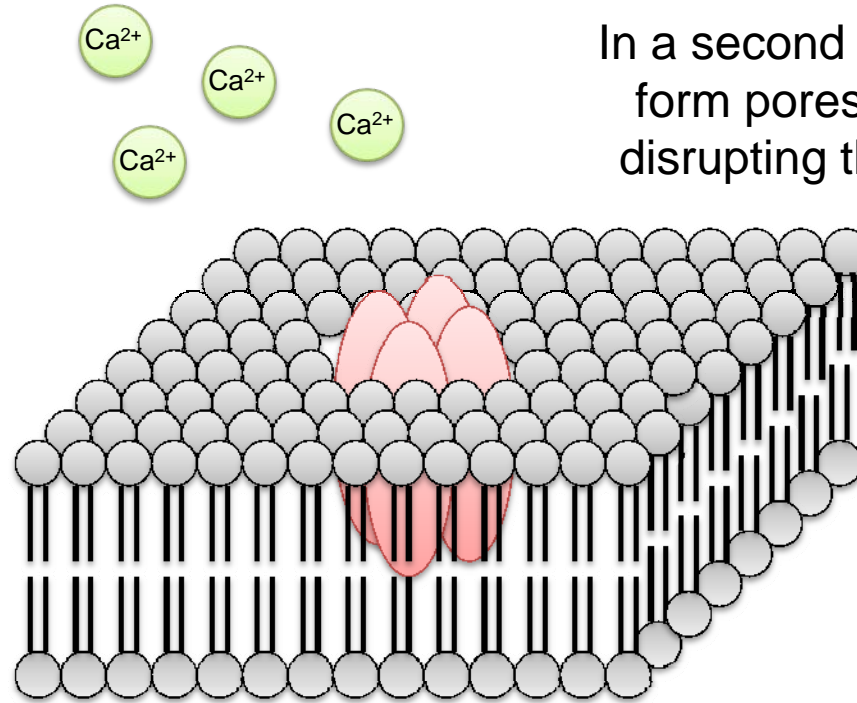
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In one hypothesis the oligomers bind on the surface and cause the wall to be come weakened.





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In a second hypothesis oligomers form pores or wholes in the wall disrupting the follow of important molecules.

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As part of the EFL project we are developing methods to investigate and detect these events and interactions

