

# CLOVES Syndrome and the PI3K/AKT Pathway

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# Method to Identify the Genetic Cause of CLOVES Syndrome



**Archival Lesional Tissue**

Bar-coded Genomic Libraries

**Targeted/Exome Sequencing**



**Fresh or Frozen Lesional Tissue**

Bar-coded RNA Libraries

**RNA Sequencing**

Bar-coded Genomic Libraries

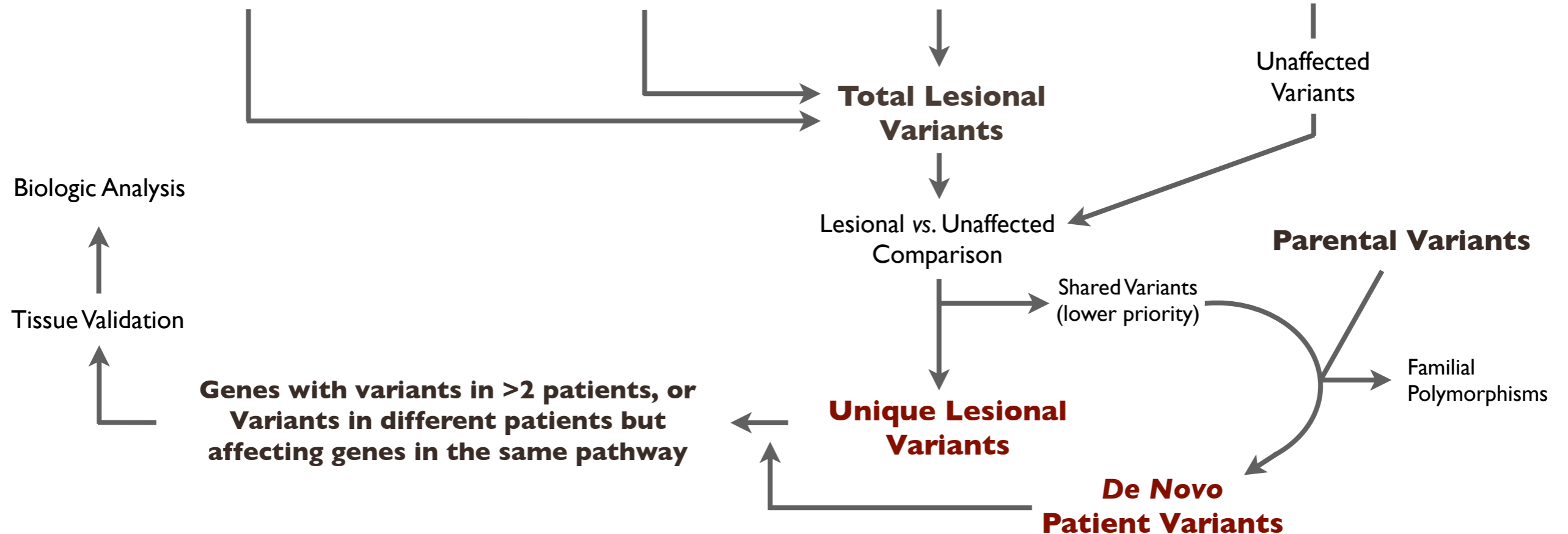
**Exome Sequencing**



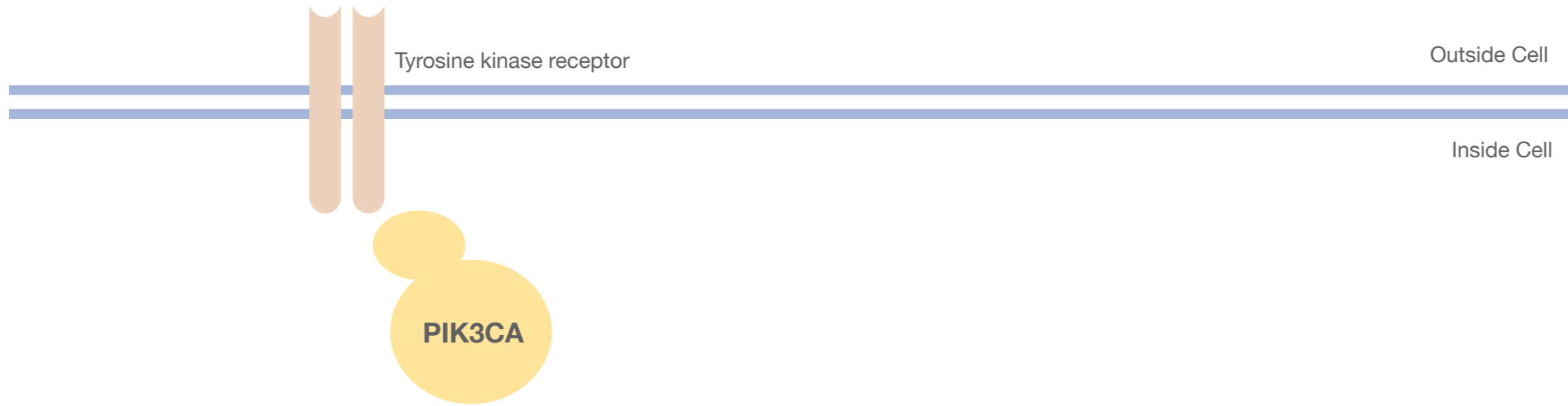
**Unaffected Blood**

Bar-coded Genomic Libraries

**Exome Sequencing**



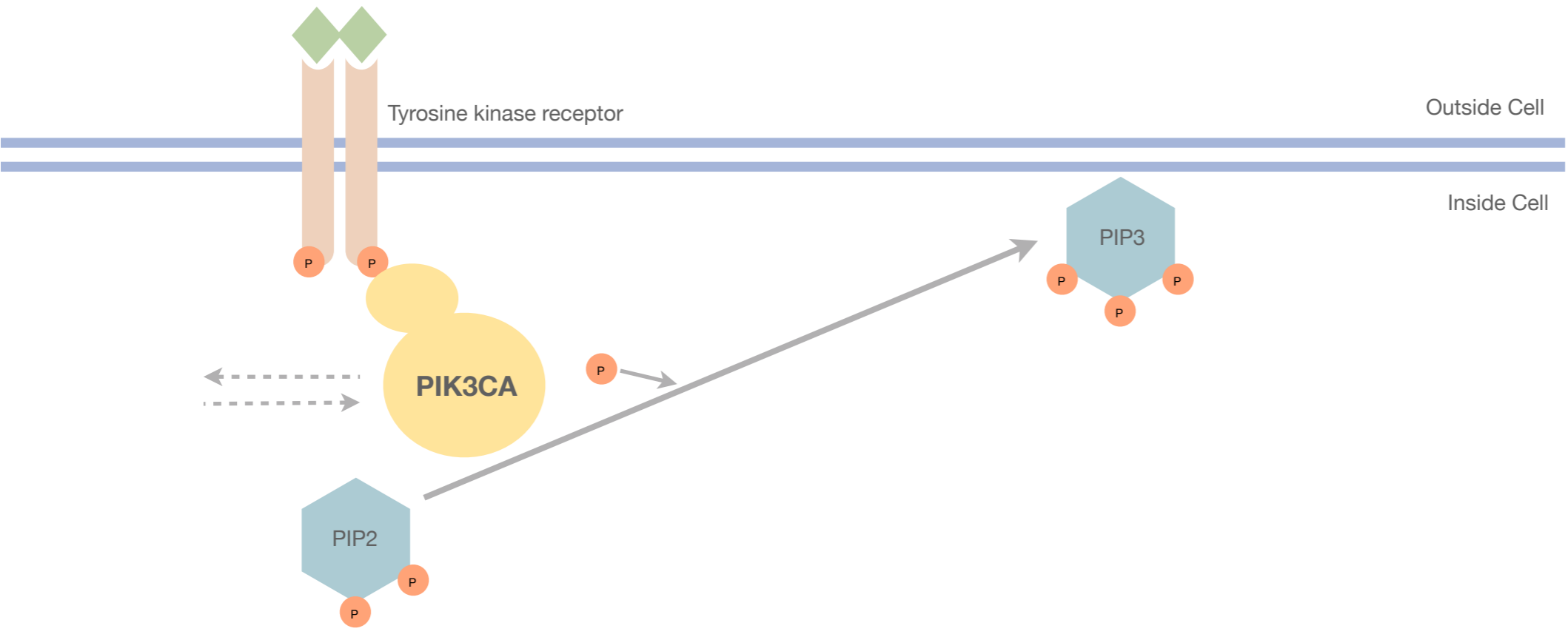
# The PI3K/ AKT/ mTOR Pathway



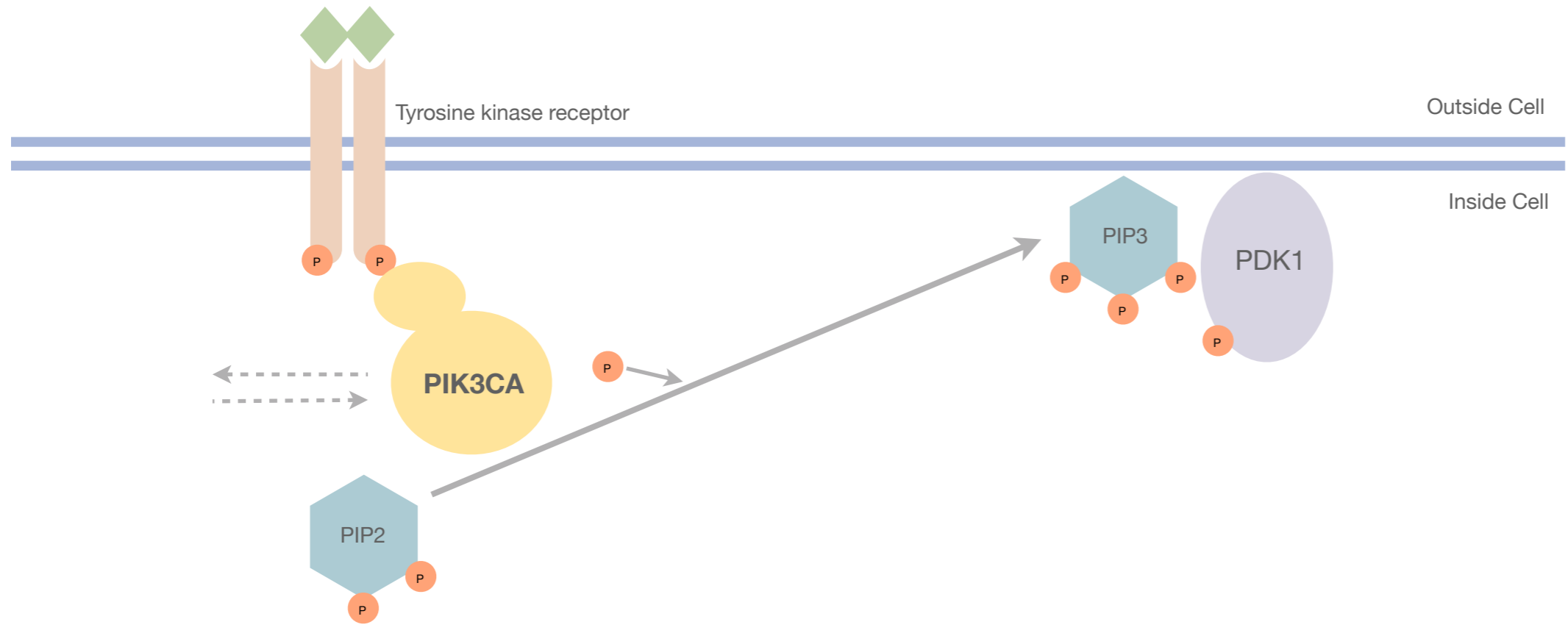
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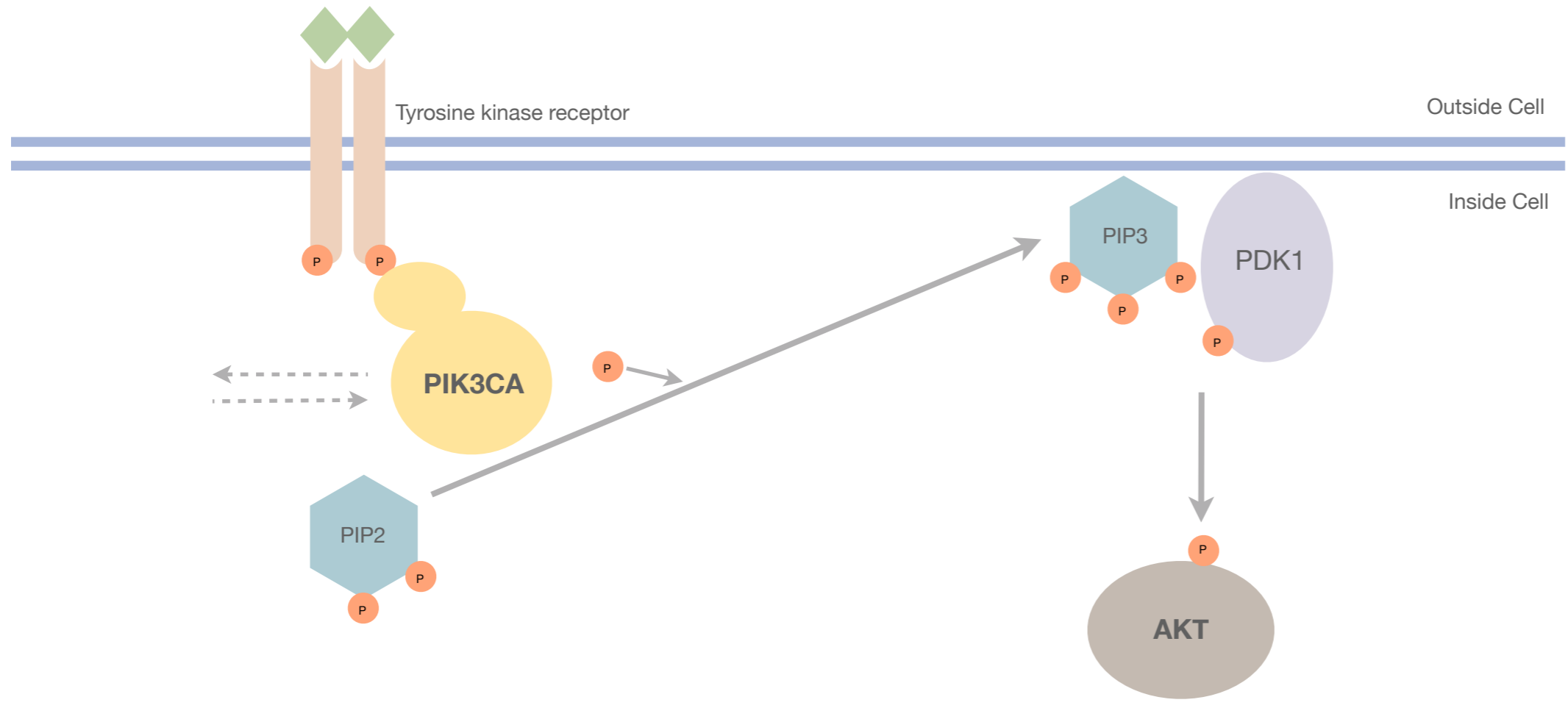
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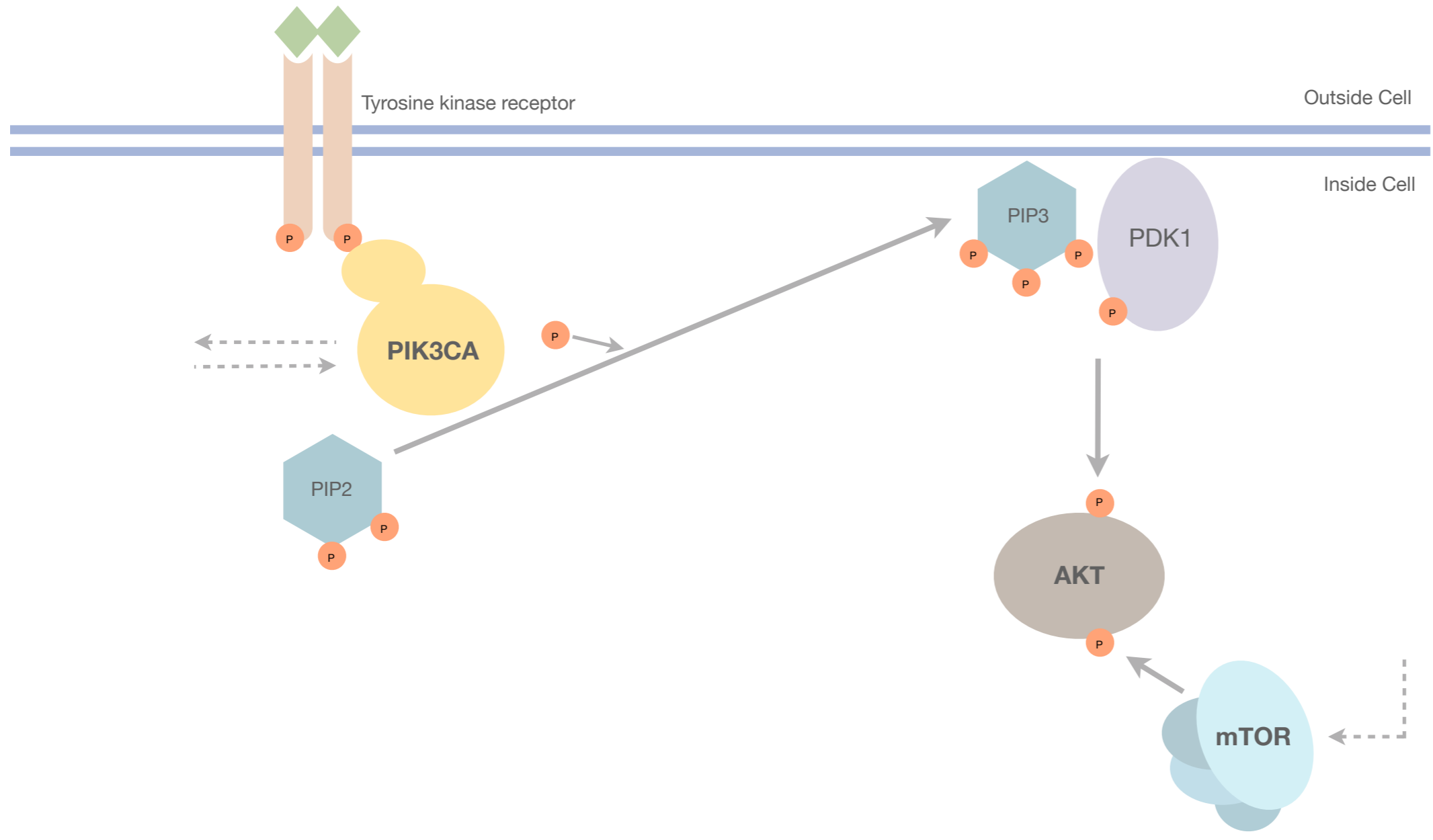
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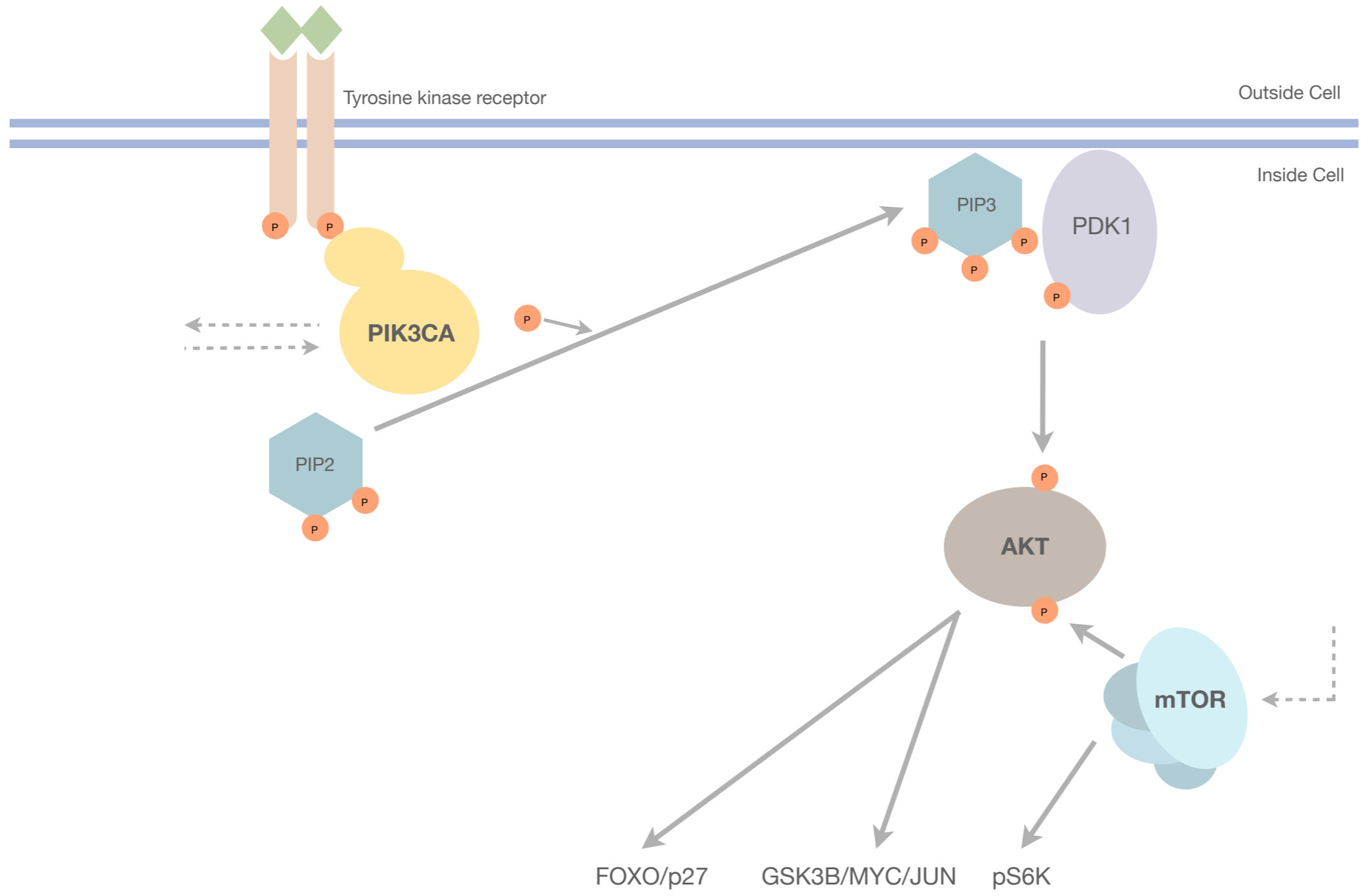


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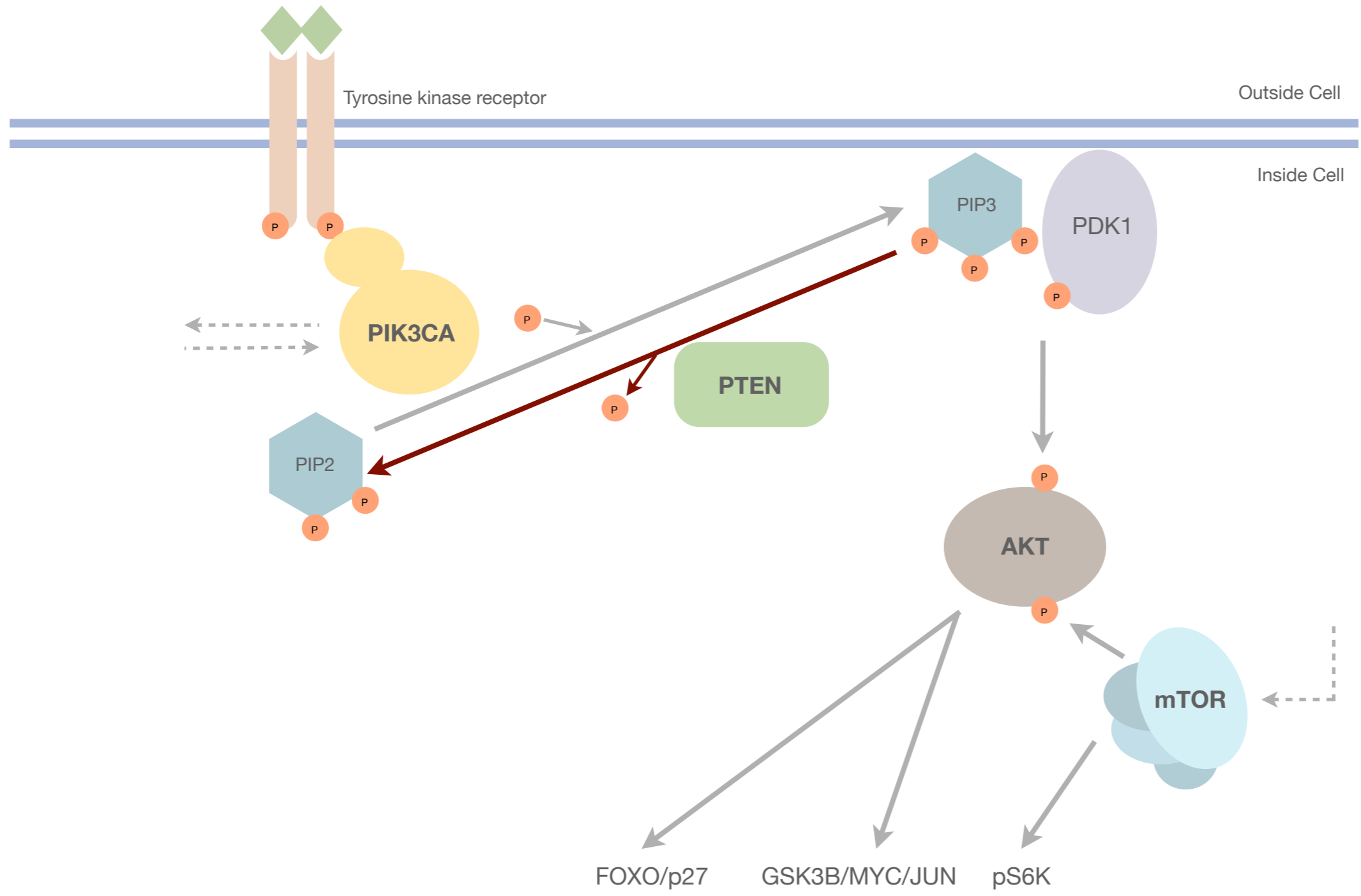


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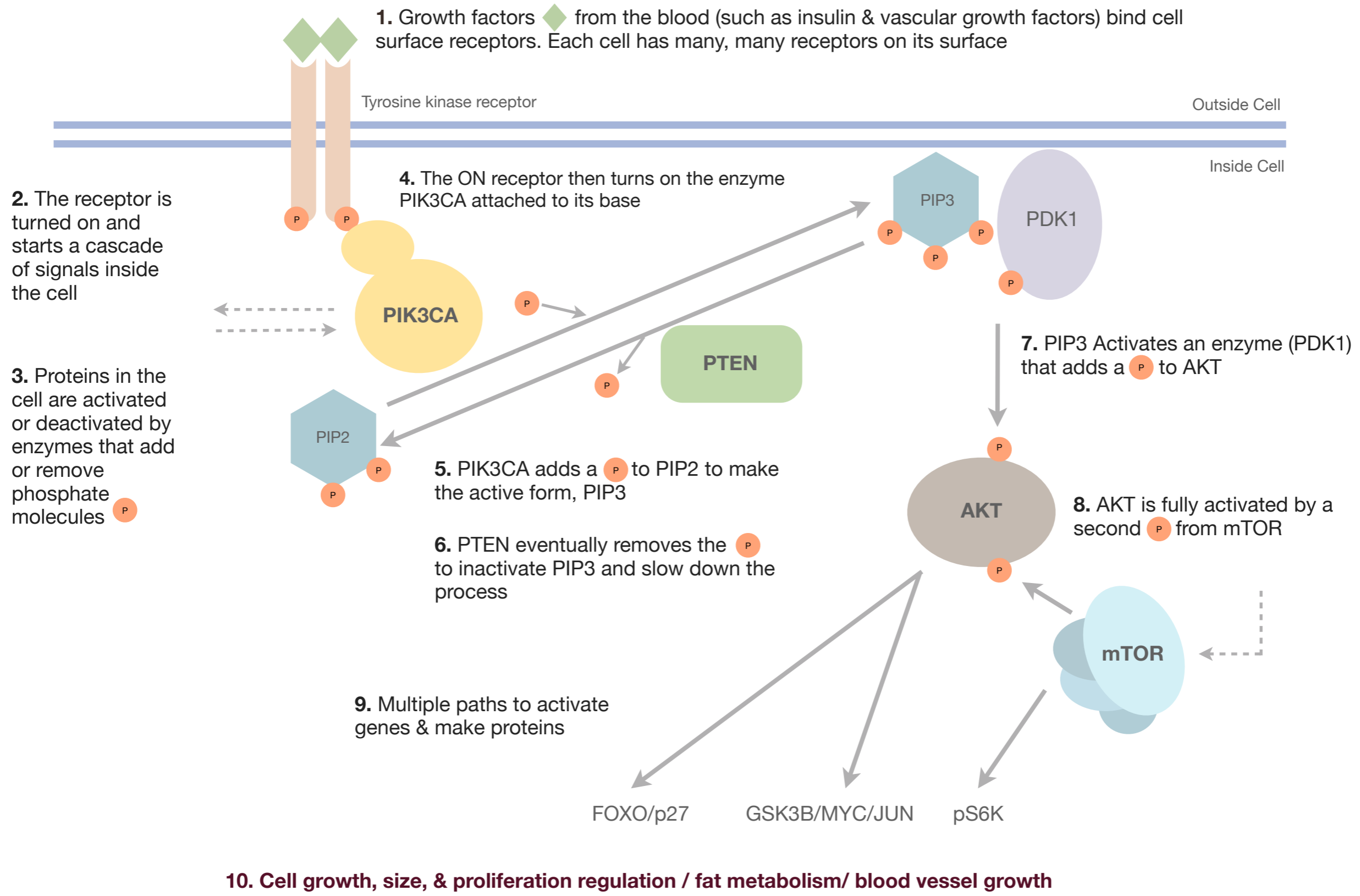
**Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth**

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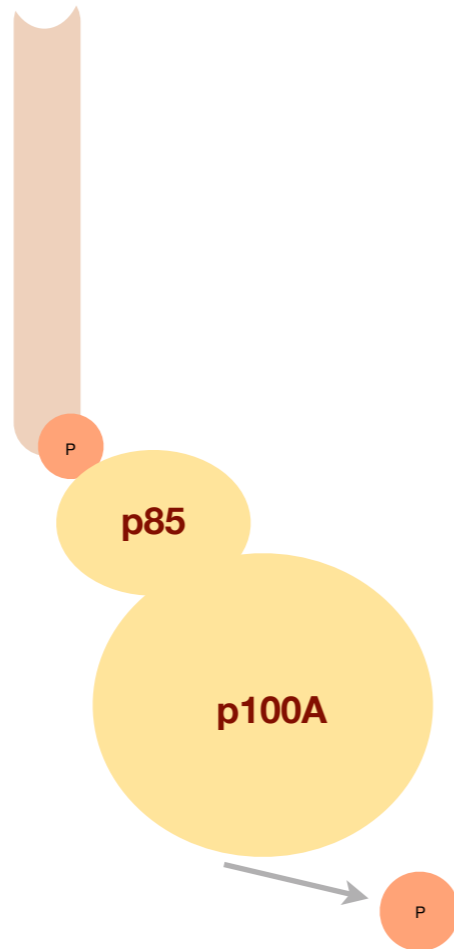


**Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth**

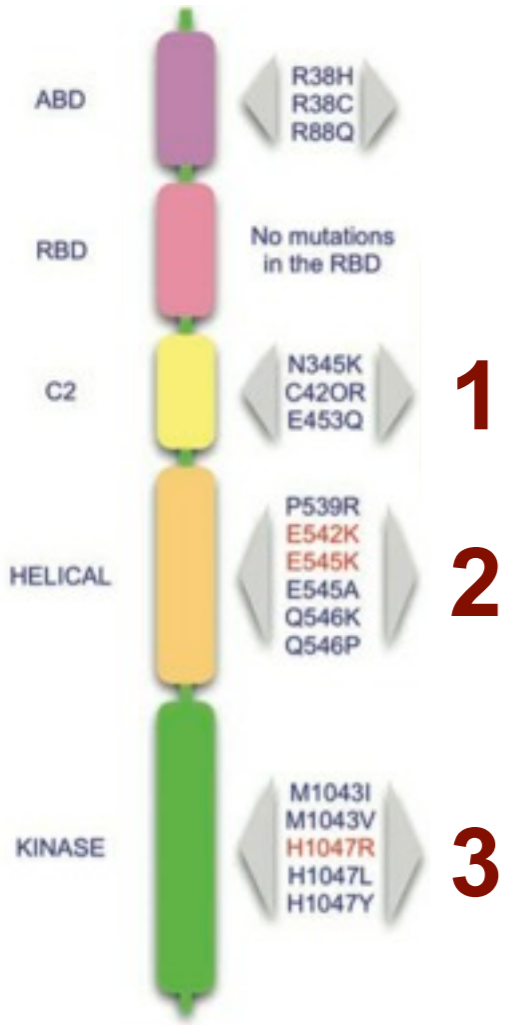
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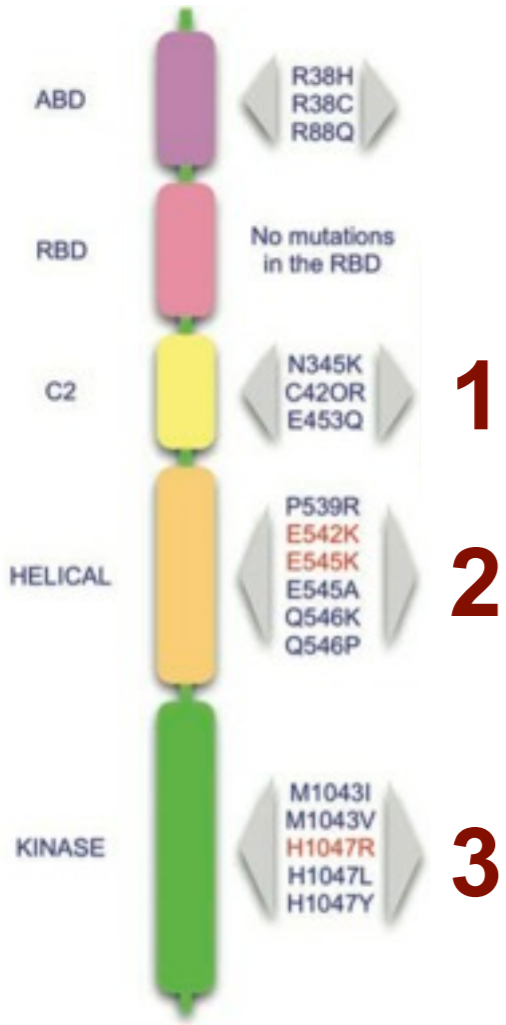
# PIK3CA Mutations & CLOVES Syndrome



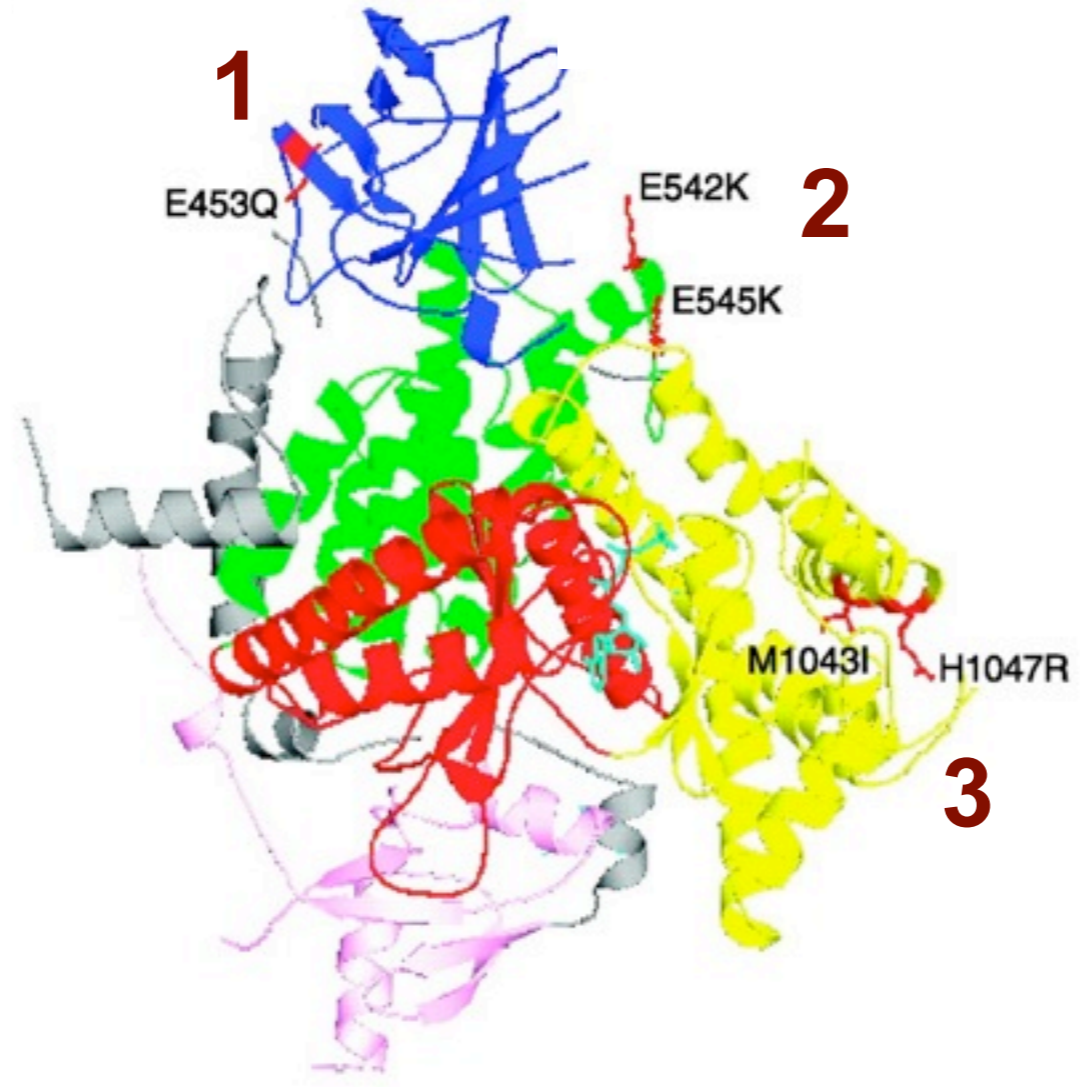
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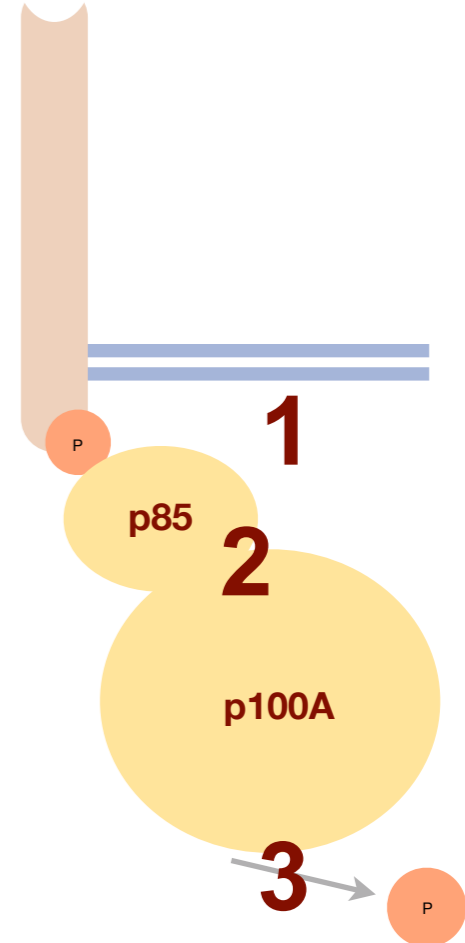
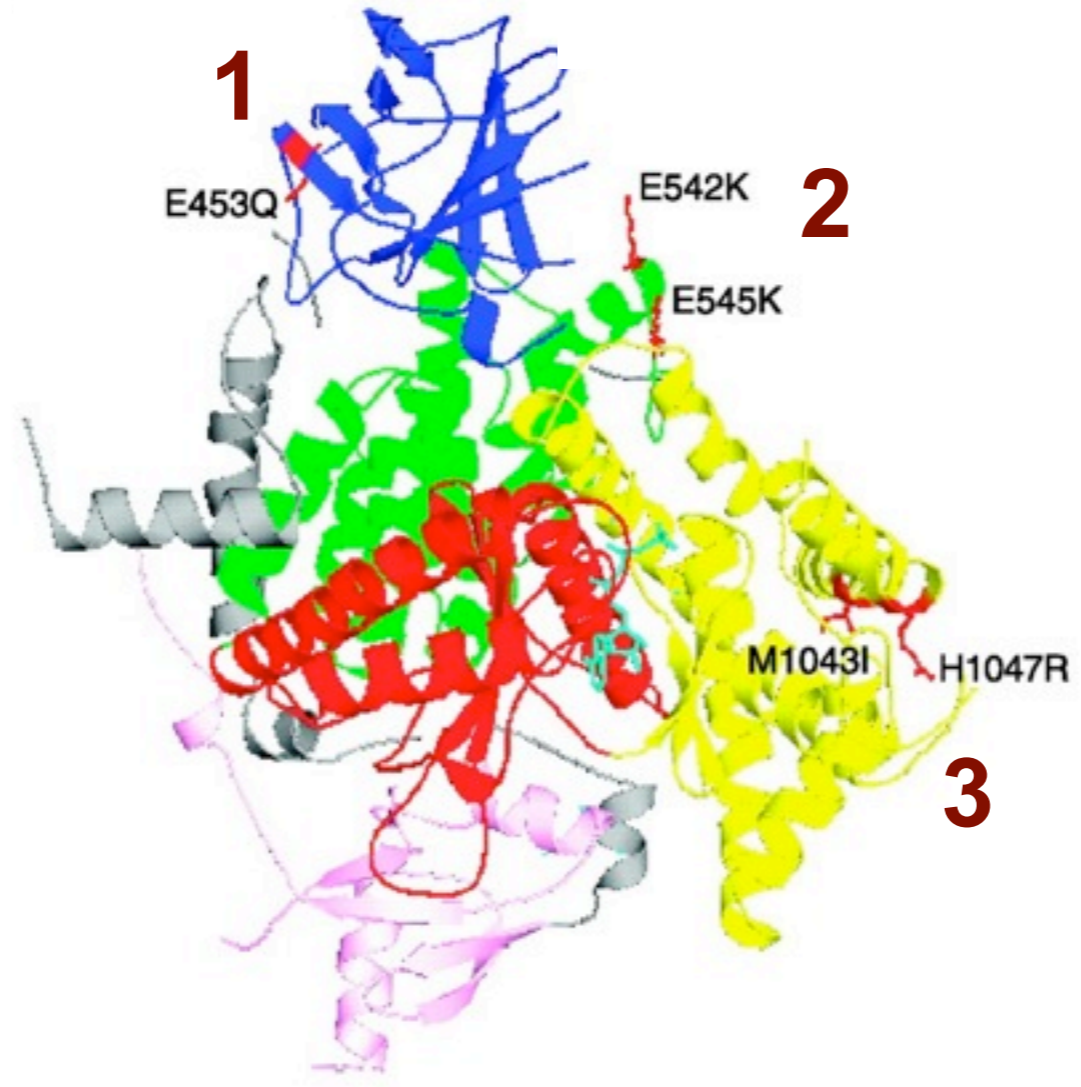
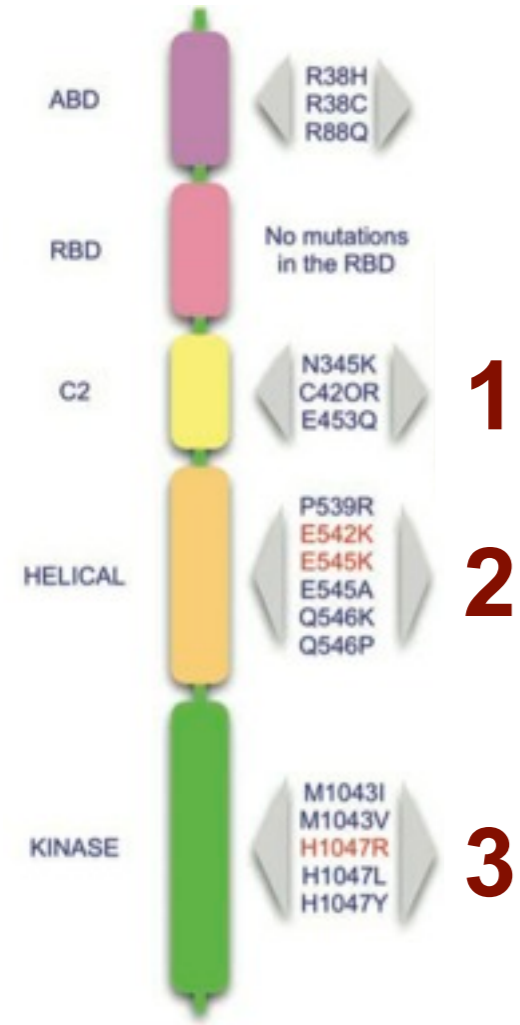
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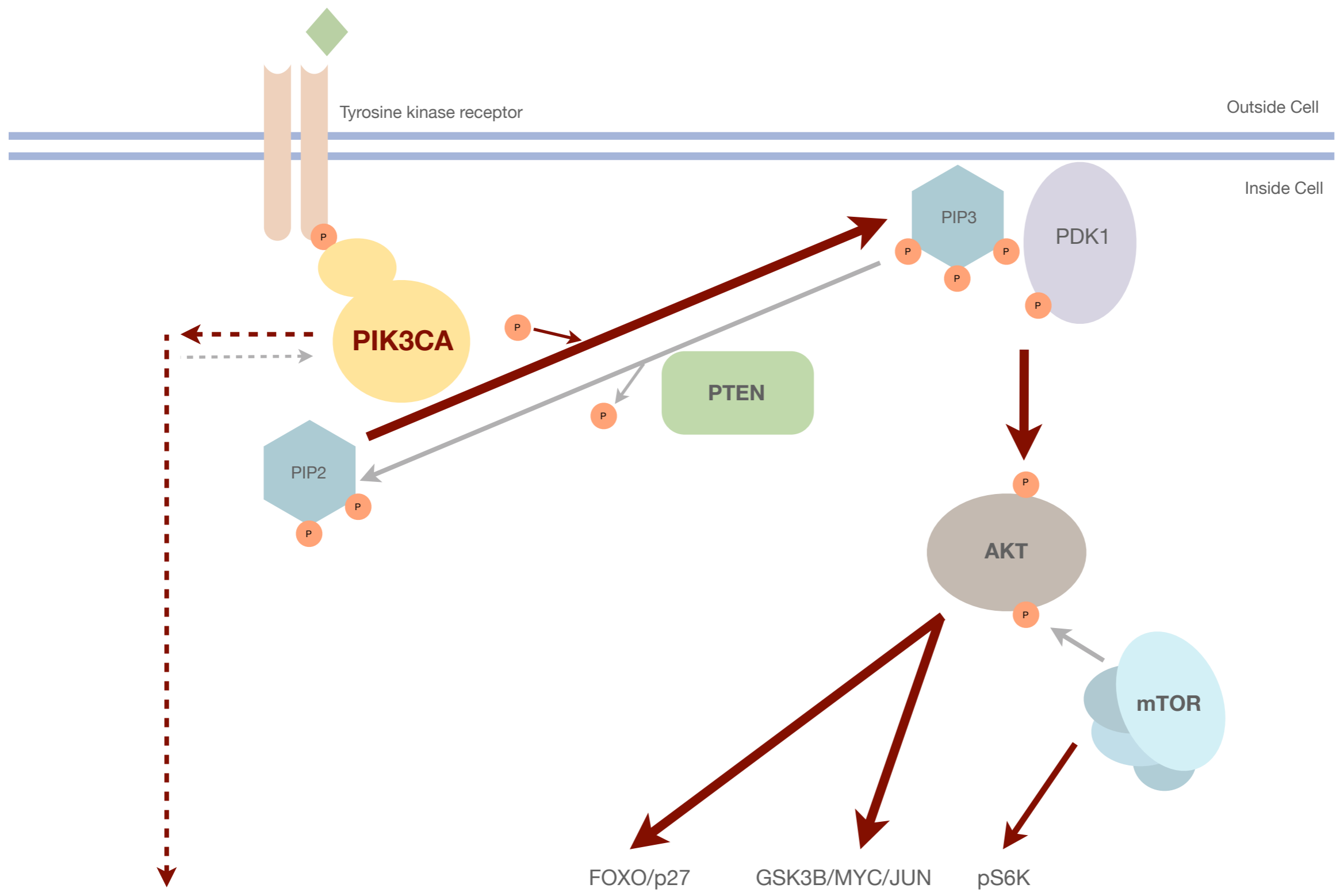
1  
2  
3



# PIK3CA Mutations & CLOVES Syndrome



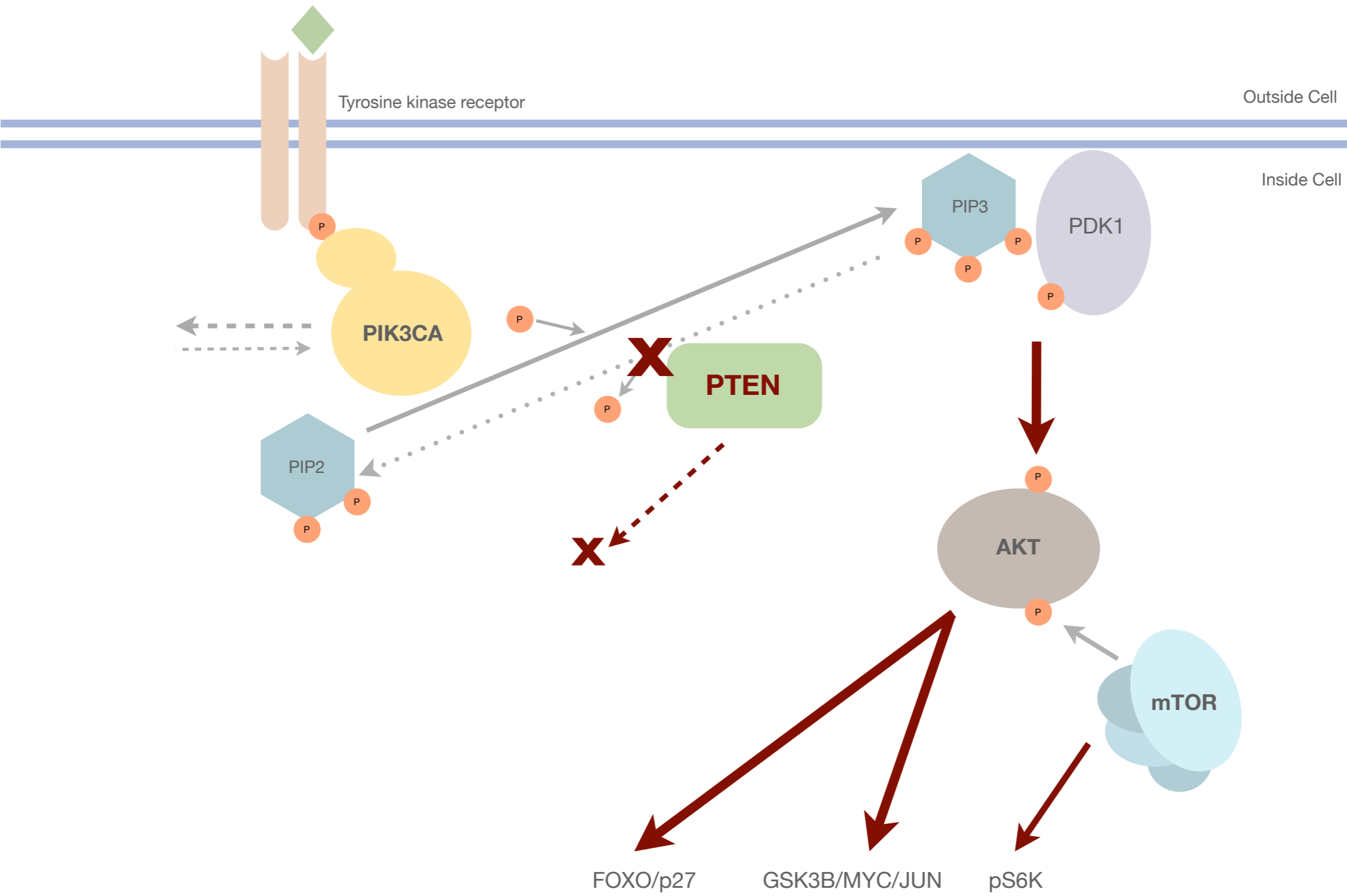
# CLOVES Syndrome/ Klippel-Trenaunay Syndrome (PIK3CA) Megalencephaly ± Capillary Malformation/ MPPH (PIK3CA, PIK3R2)



**Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth**

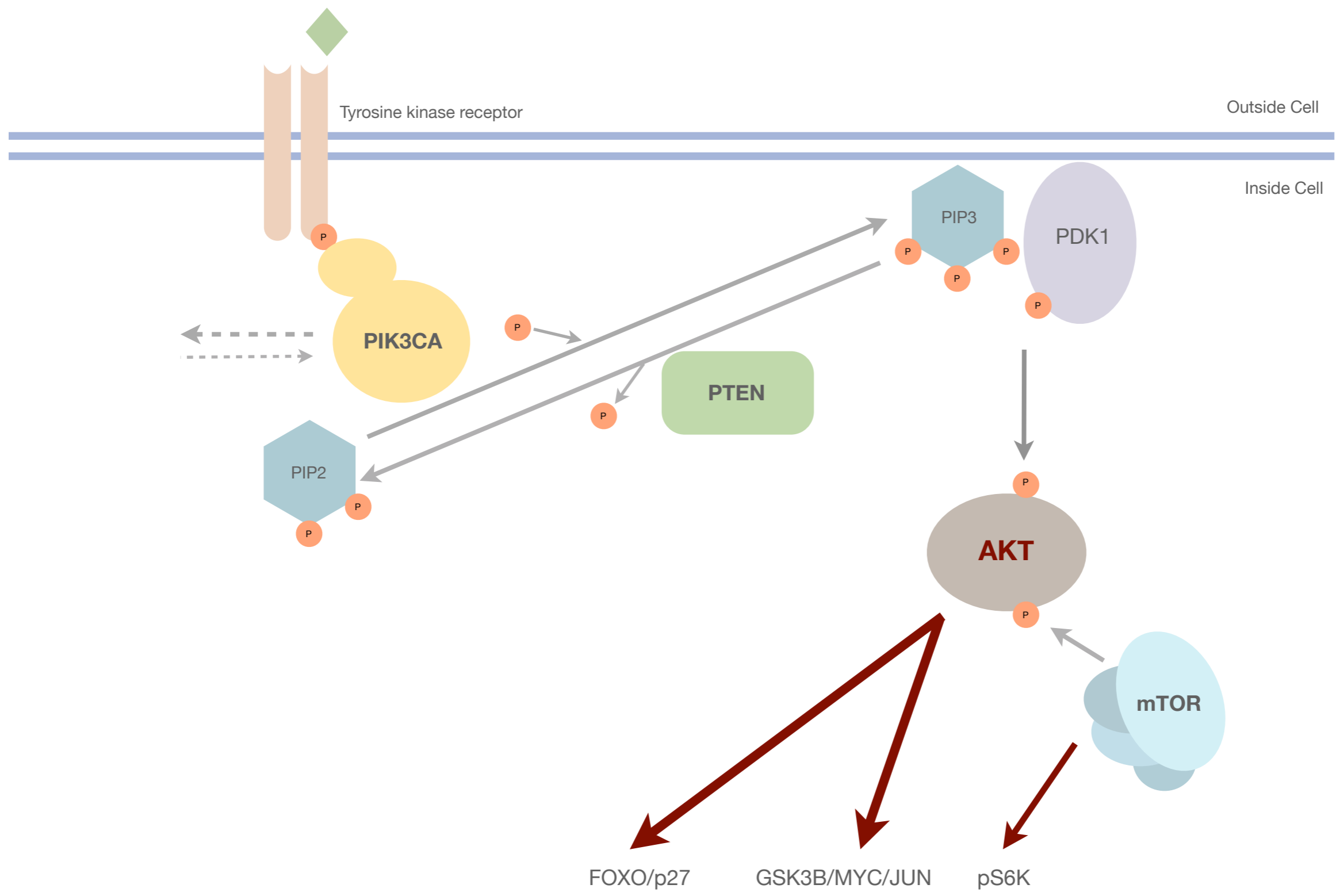


# PTEN Hamartoma Tumor Syndrome



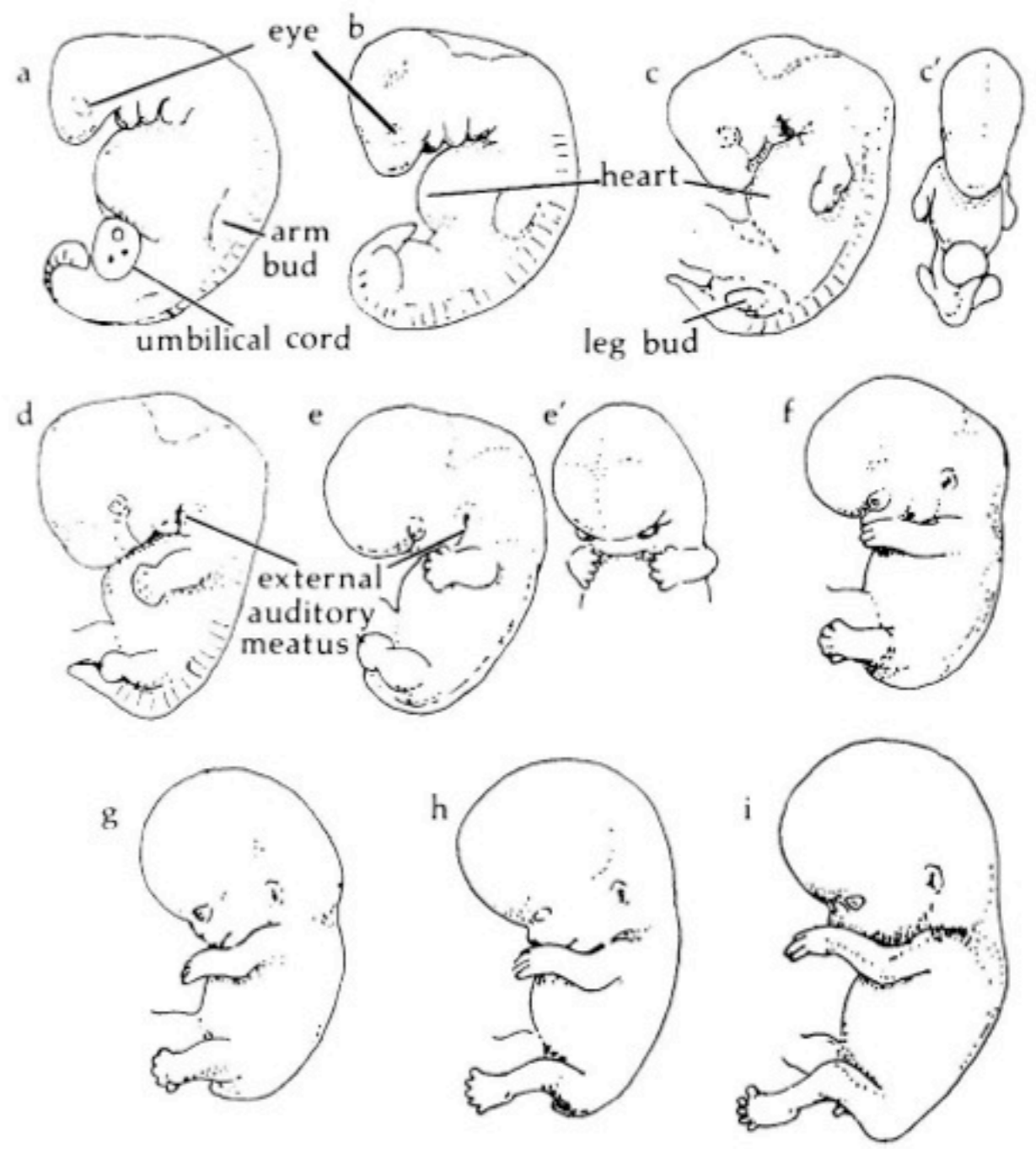
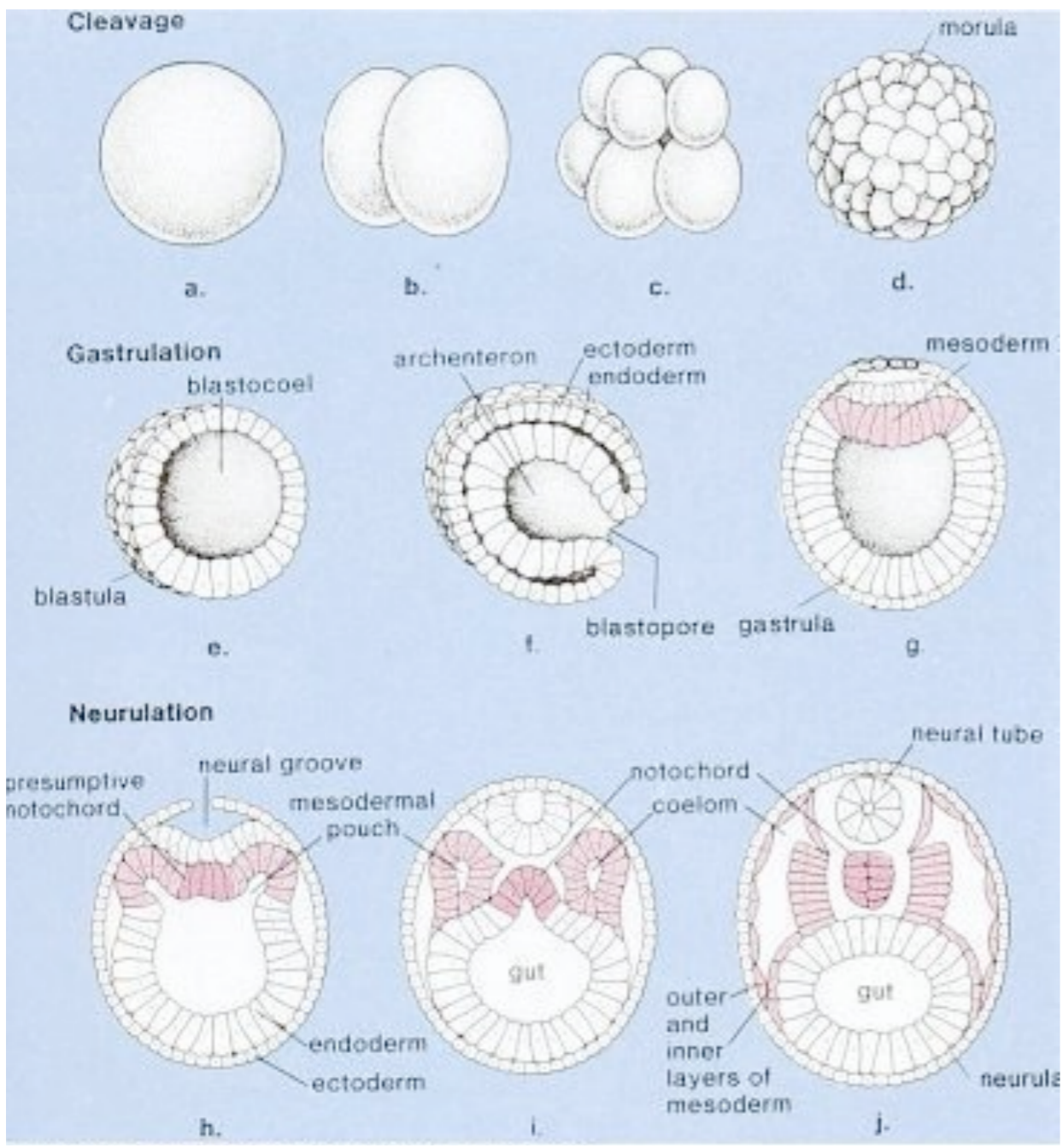
**Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth**

# Proteus Syndrome (AKT1) Overgrowth-Hypoglycemia (AKT2) / Hemimegalencephaly (AKT3)

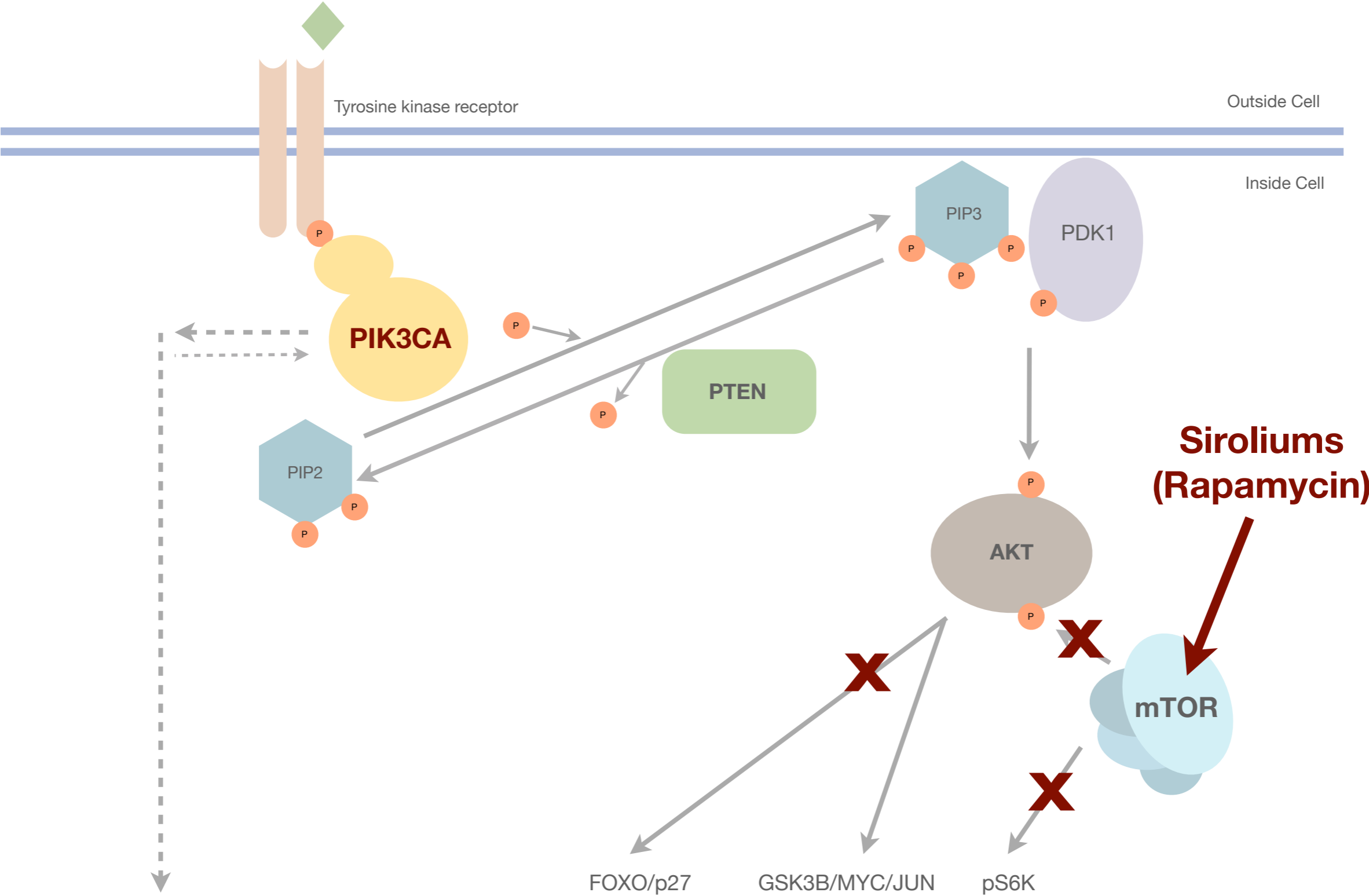


**Cell growth, size, & proliferation regulation / fat metabolism**

**CLOVES Syndrome/ Klippel-Trenaunay Syndrome (PIK3CA)  
 Megalencephaly ± Capillary Malformation/ MPPH (PIK3CA, PIK3R2)**

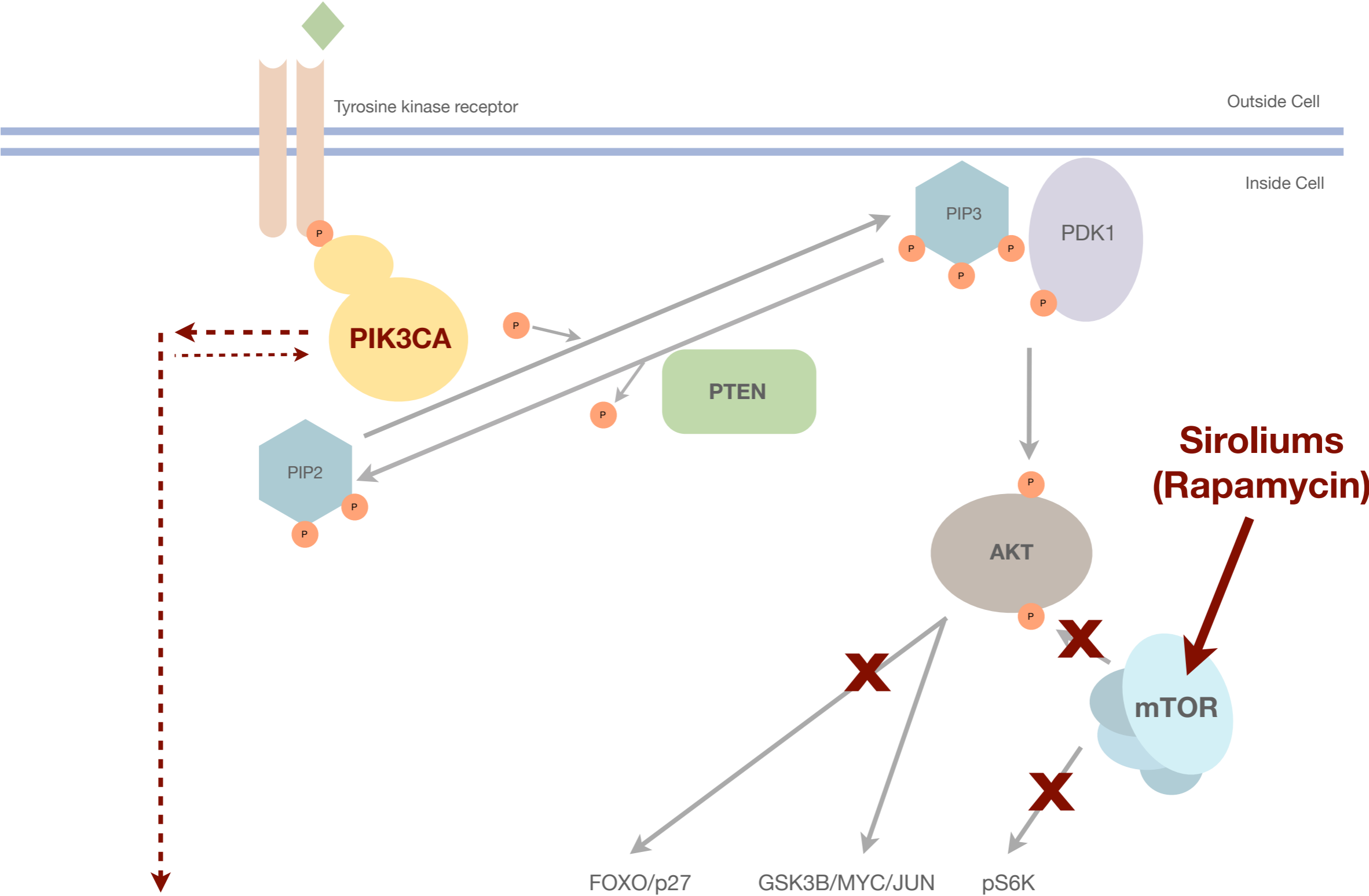


# CLOVES Syndrome- New Therapies



Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth

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Cell growth, size, & proliferation regulation / fat metabolism/ blood vessel growth

