

Polycystic Ovary Syndrome

Madison Sanderson

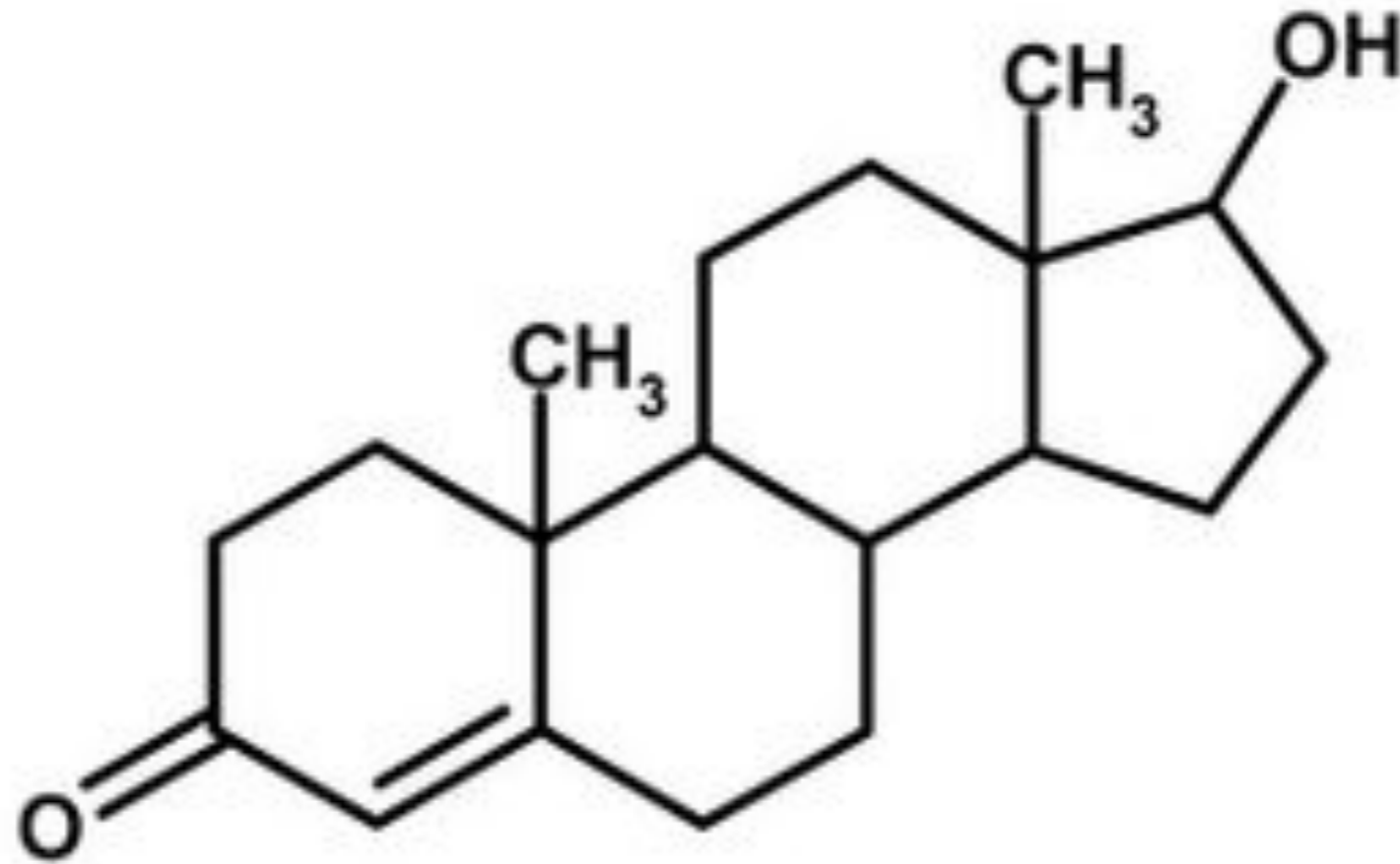


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UNIVERSITY OF WISCONSIN-MADISON

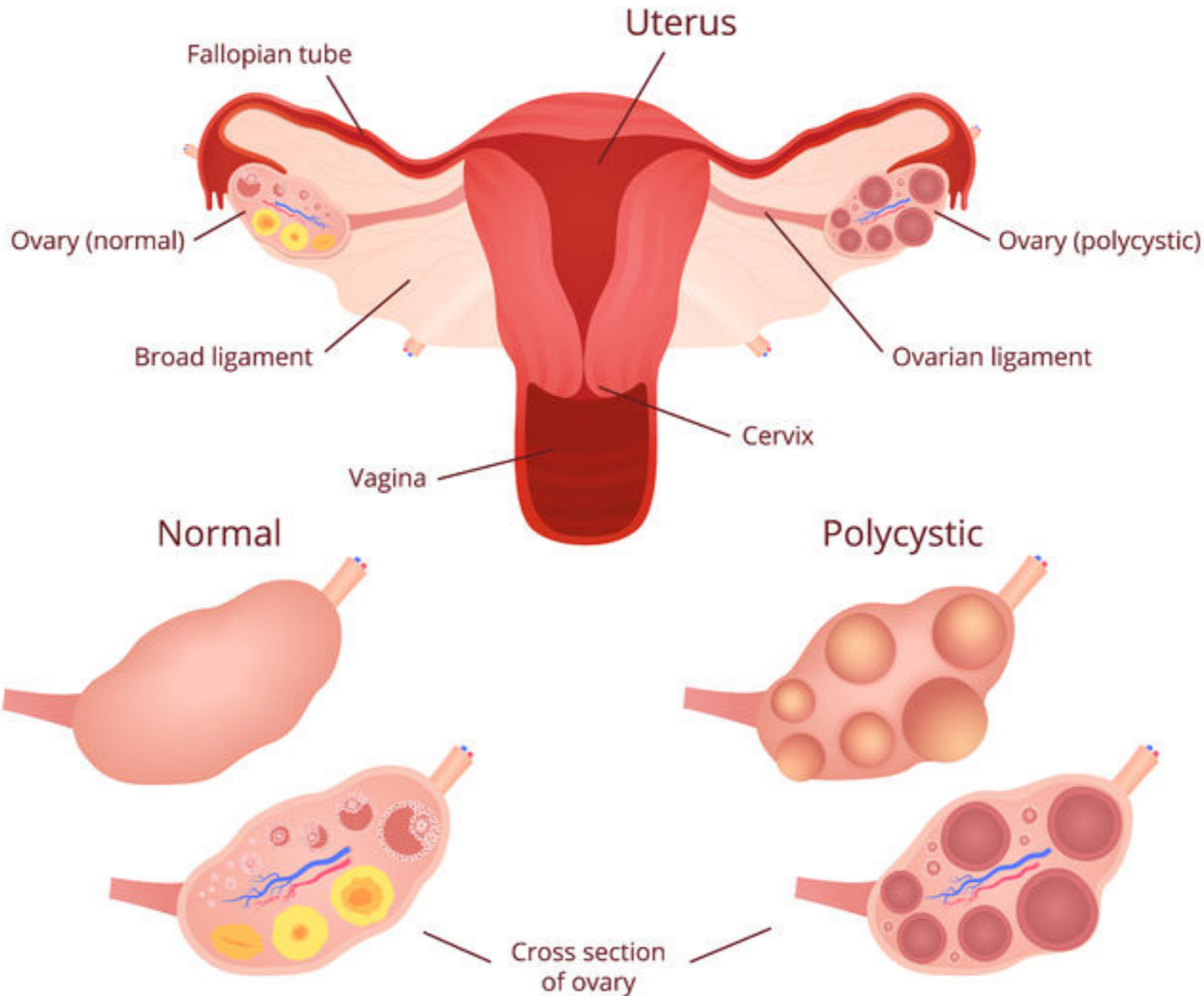
What is Polycystic Ovary Syndrome (PCOS)?



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What gene is associated with PCOS?

StAR

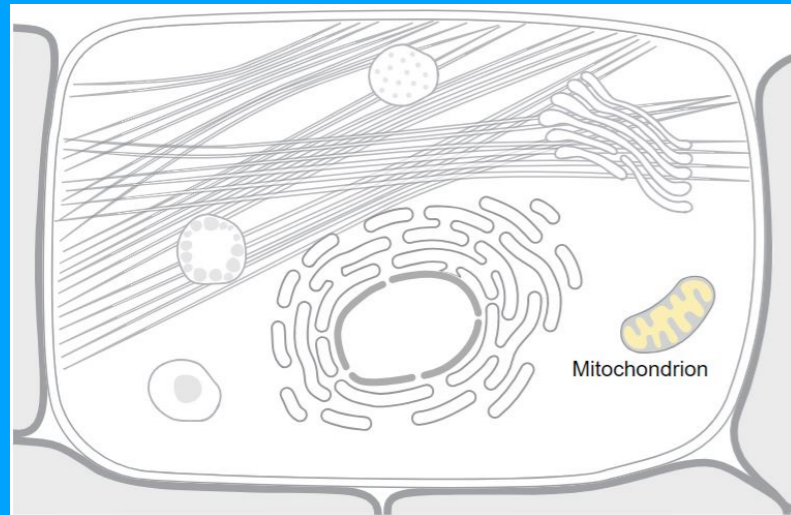


What gene is associated with PCOS?

StAR



Cellular Component



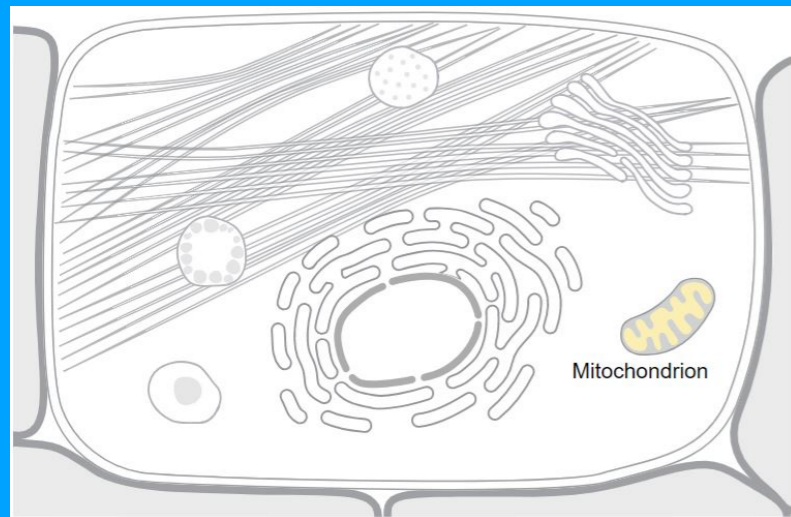
Mitochondrion

What gene is associated with PCOS?

StAR

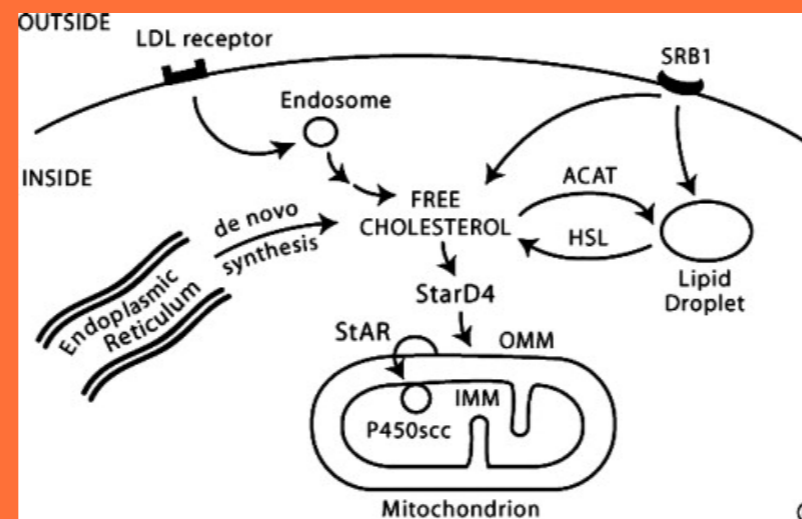


Cellular Component



Mitochondrion

Molecular Function



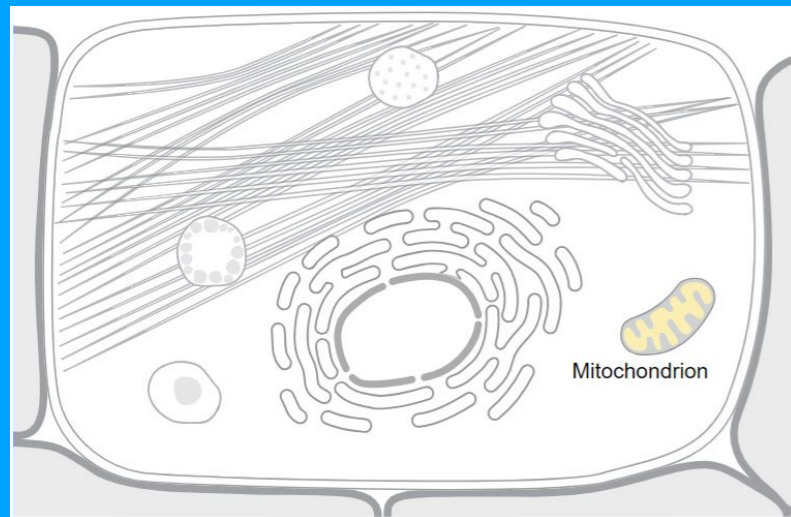
Cholesterol Transport
Activity

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StAR

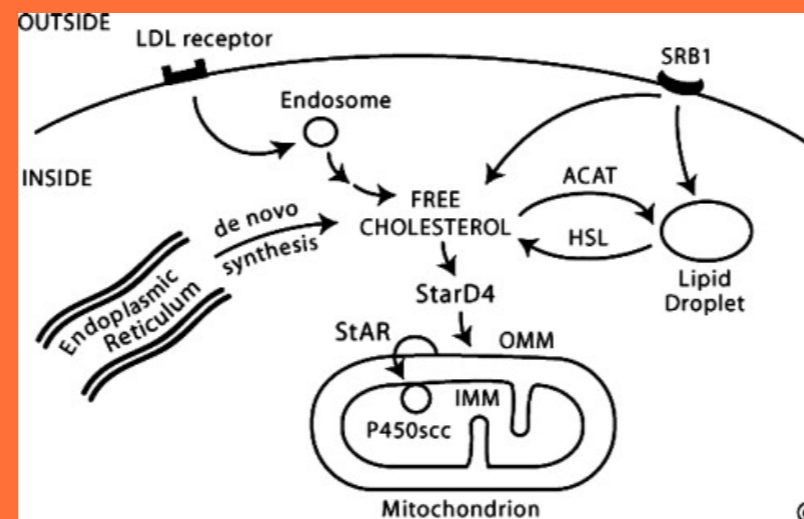


Cellular Component



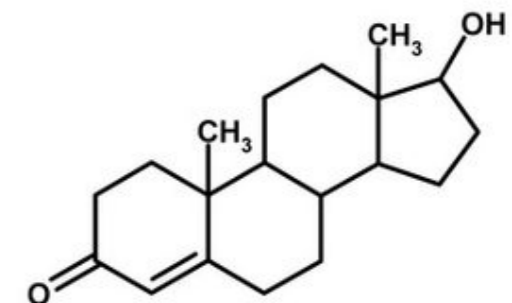
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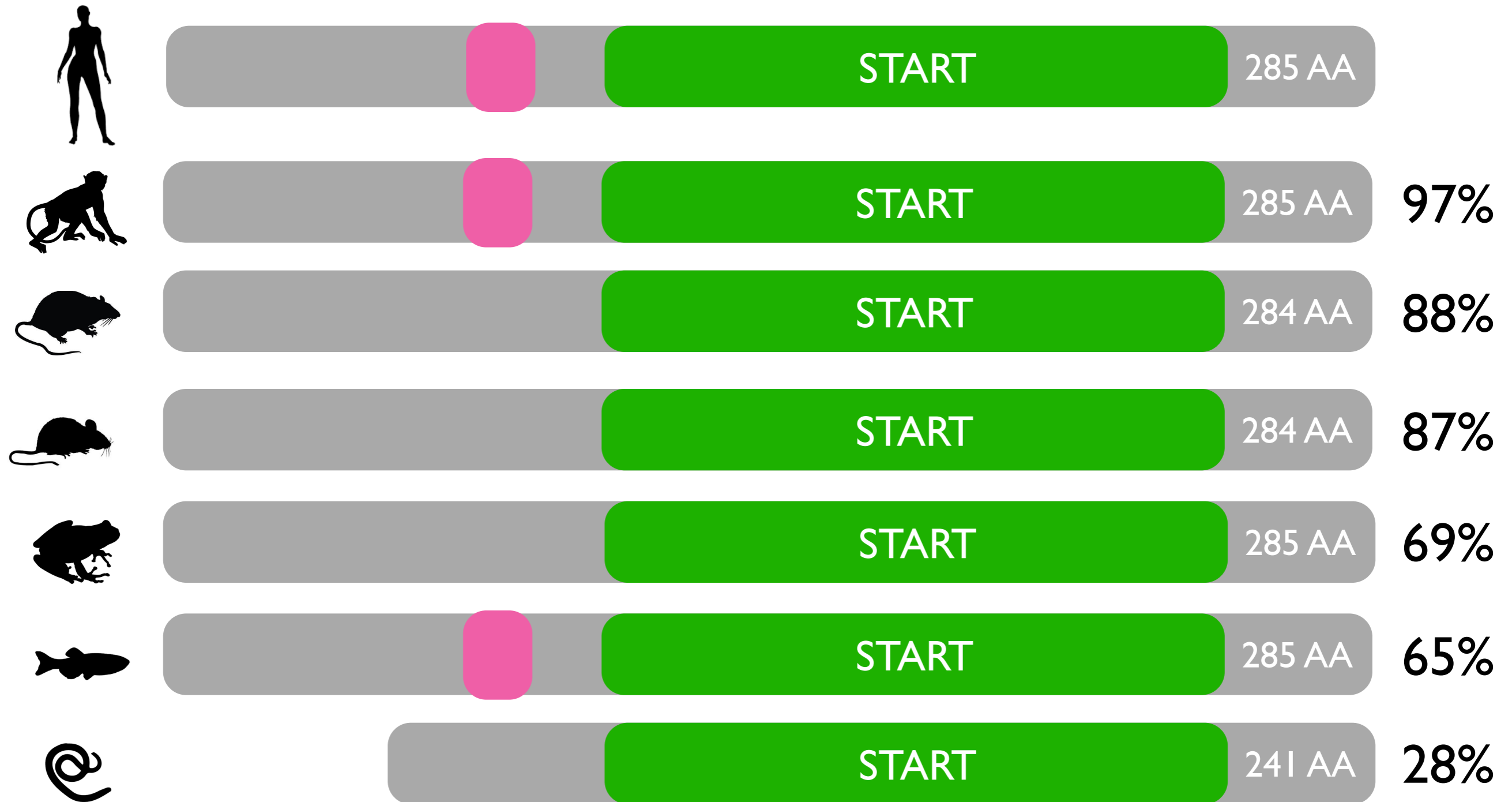
Cholesterol Transport Activity

Biological Process

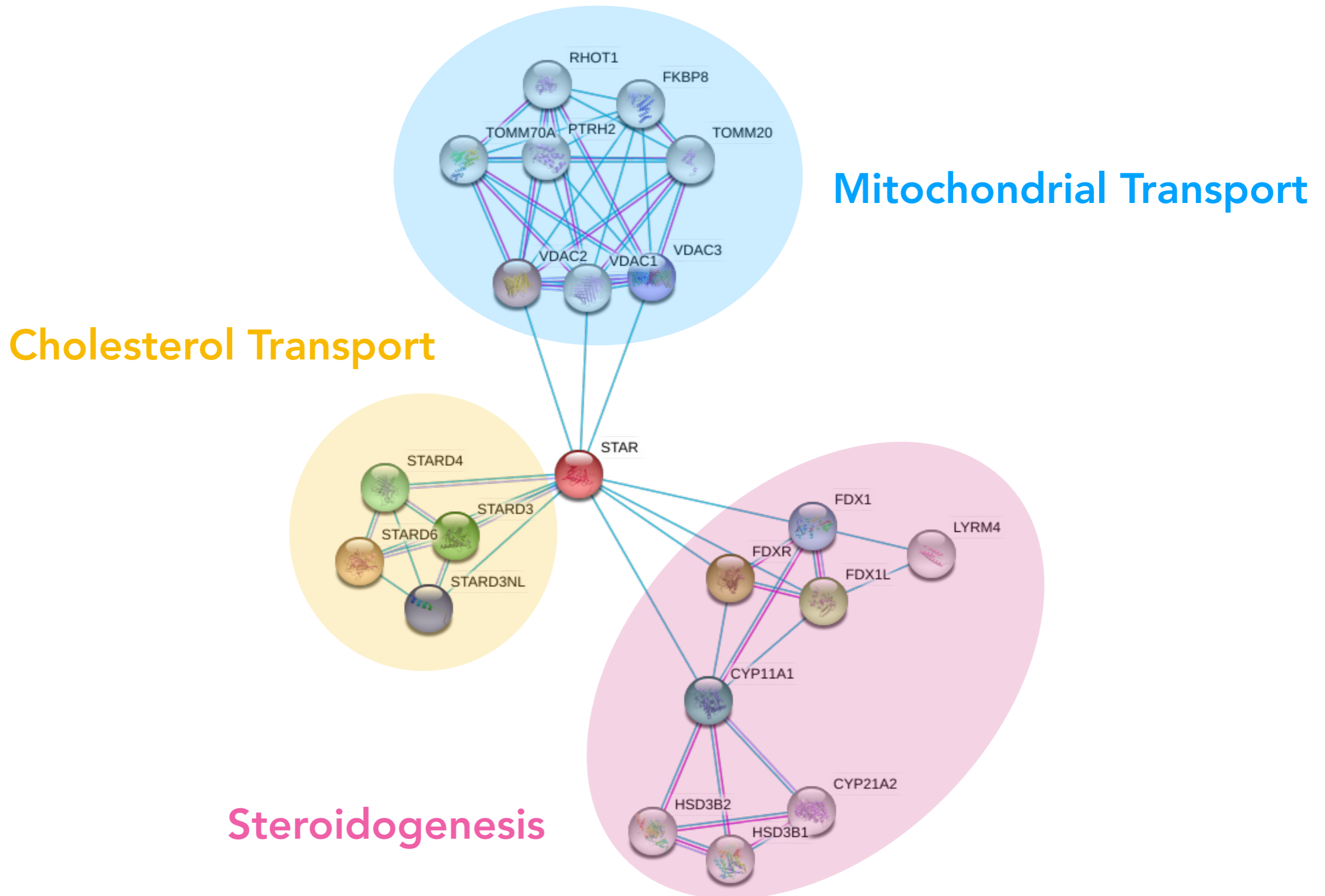


Steroid Biosynthetic Process

StAR domains across species



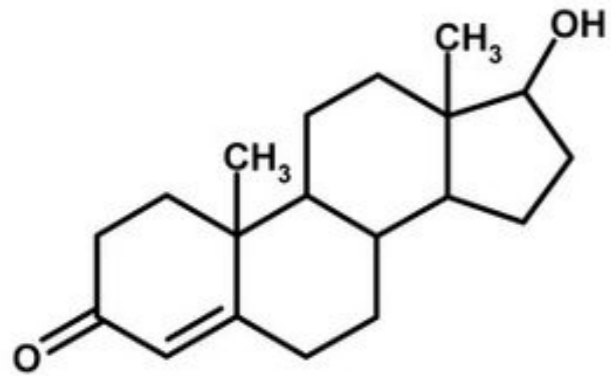
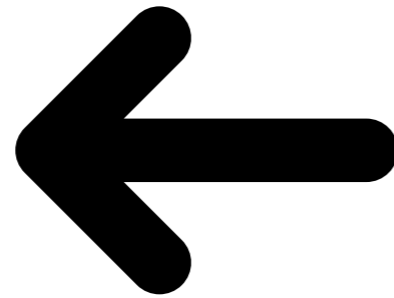
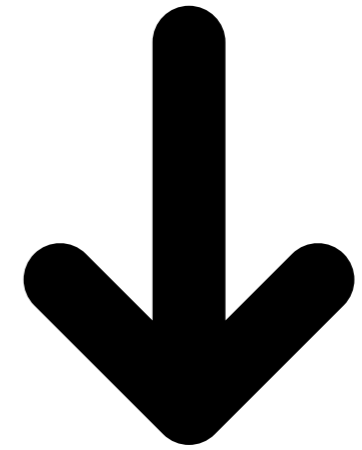
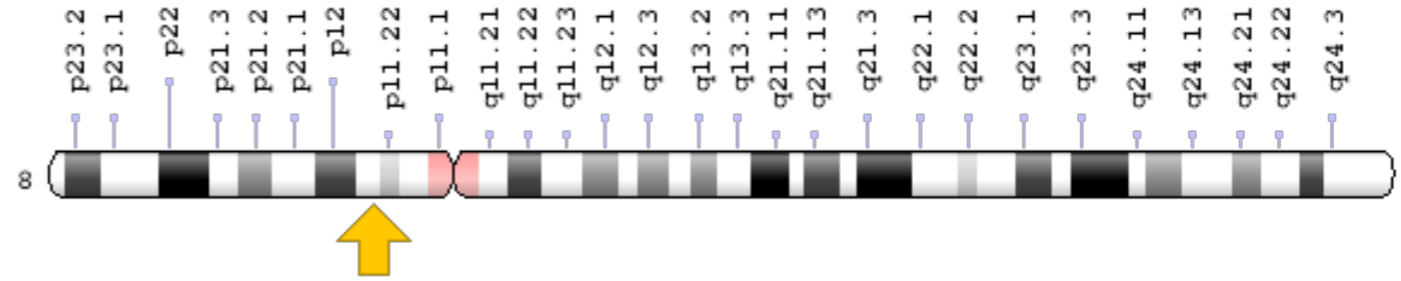
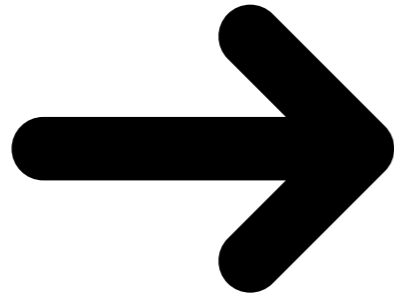
StAR protein interactions



Rattus norvegicus:
a great model organism for PCOS



The knowledge gap



What is the primary goal?

To better understand what factors regulate **StAR** expression and androgen levels in PCOS

Aim 1

Determine the effect of variation at the GATA sequence within the StAR promoter on rat androgen levels and StAR expression within ovarian cells

Aim 2

Determine what other genes are highly-associated with StAR overexpression in ovarian cells of hyperandrogenized rats

Aim 3

Determine proteins that directly interact with StAR within ovarian cells of hyperandrogenized rats

Aim 1: Determine the effect of nonsynonymous variation at the GATA sequence within the StAR promoter on rat androgen levels and StAR expression within ovarian cells

**Next-gen
DNA
sequencing**

CRISPR/Cas9

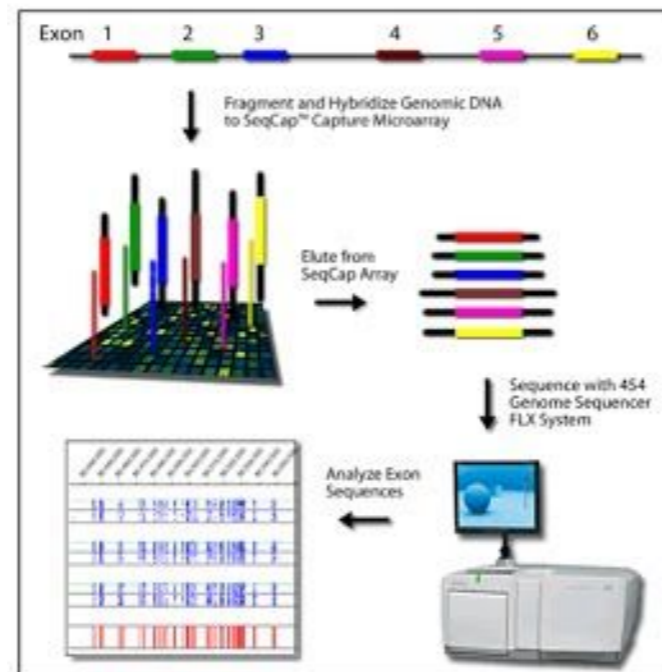
**Measure StAR
expression**

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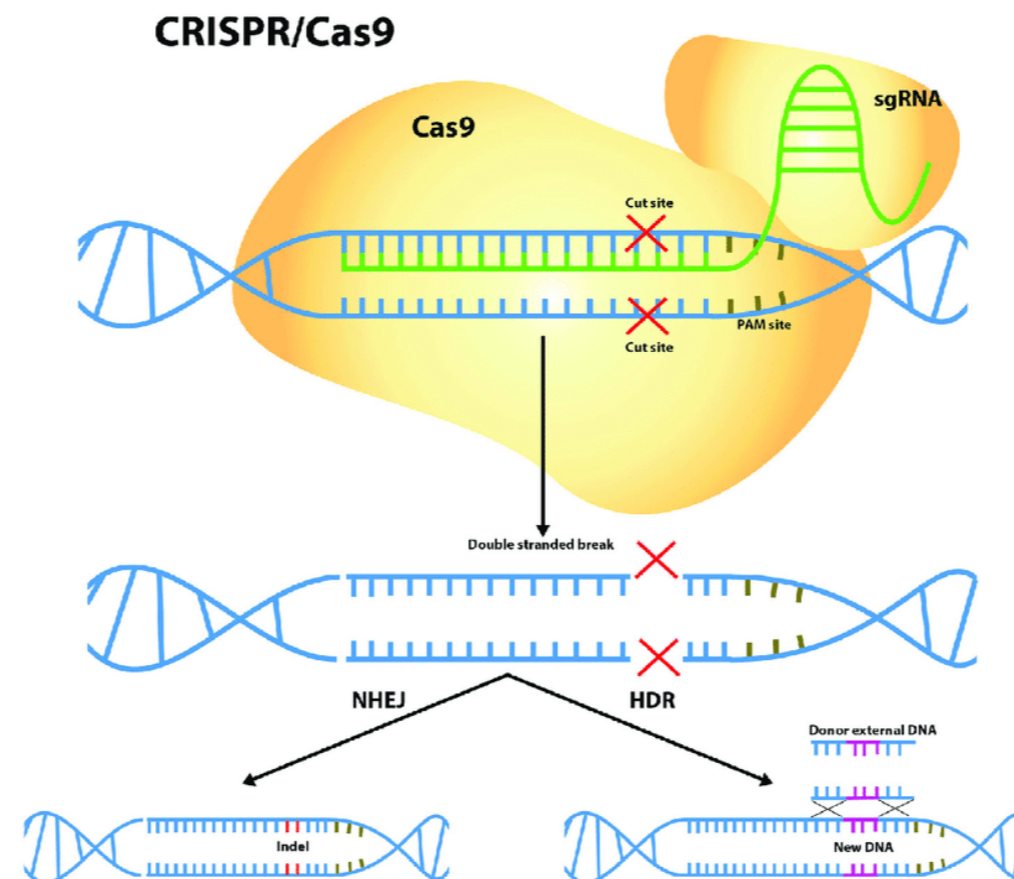
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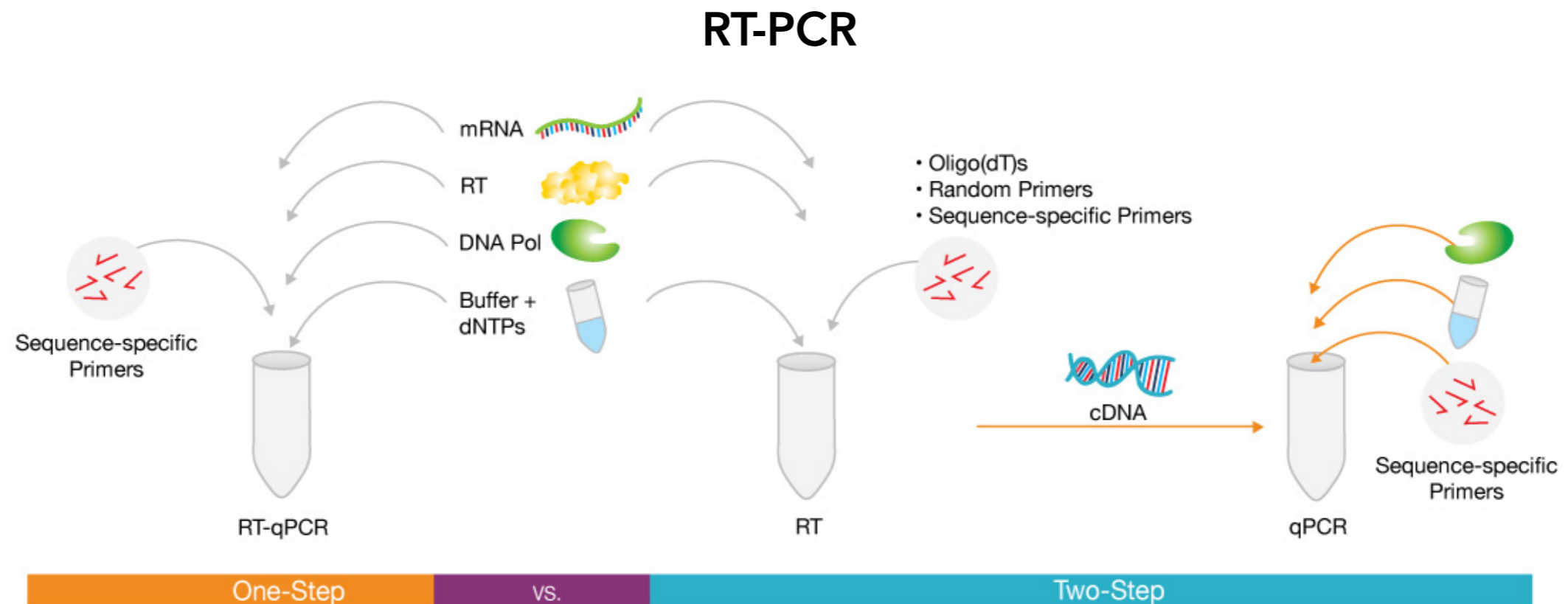


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**Identify rats
with StAR
overexpression**

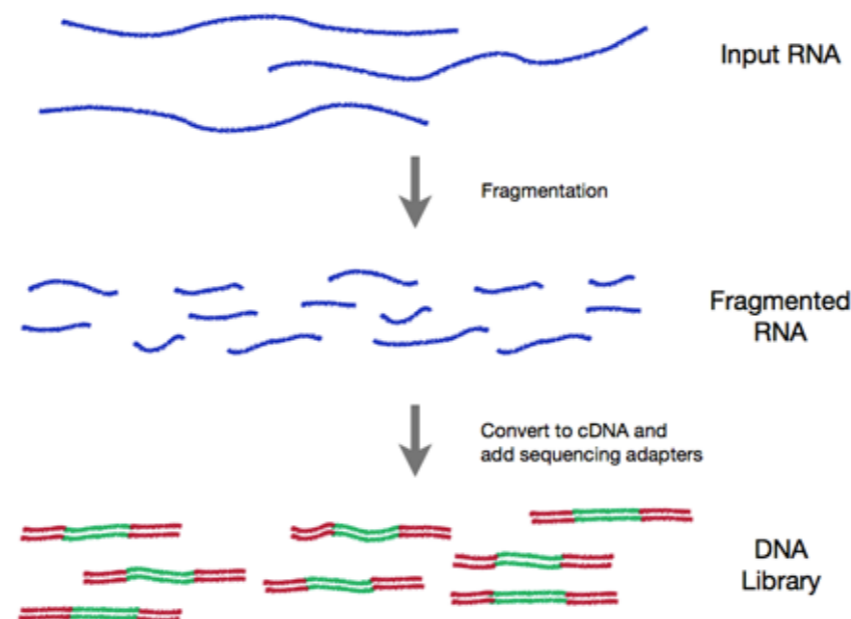
**RNAi
genome-wide
screen**

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RNAi genome-wide screen

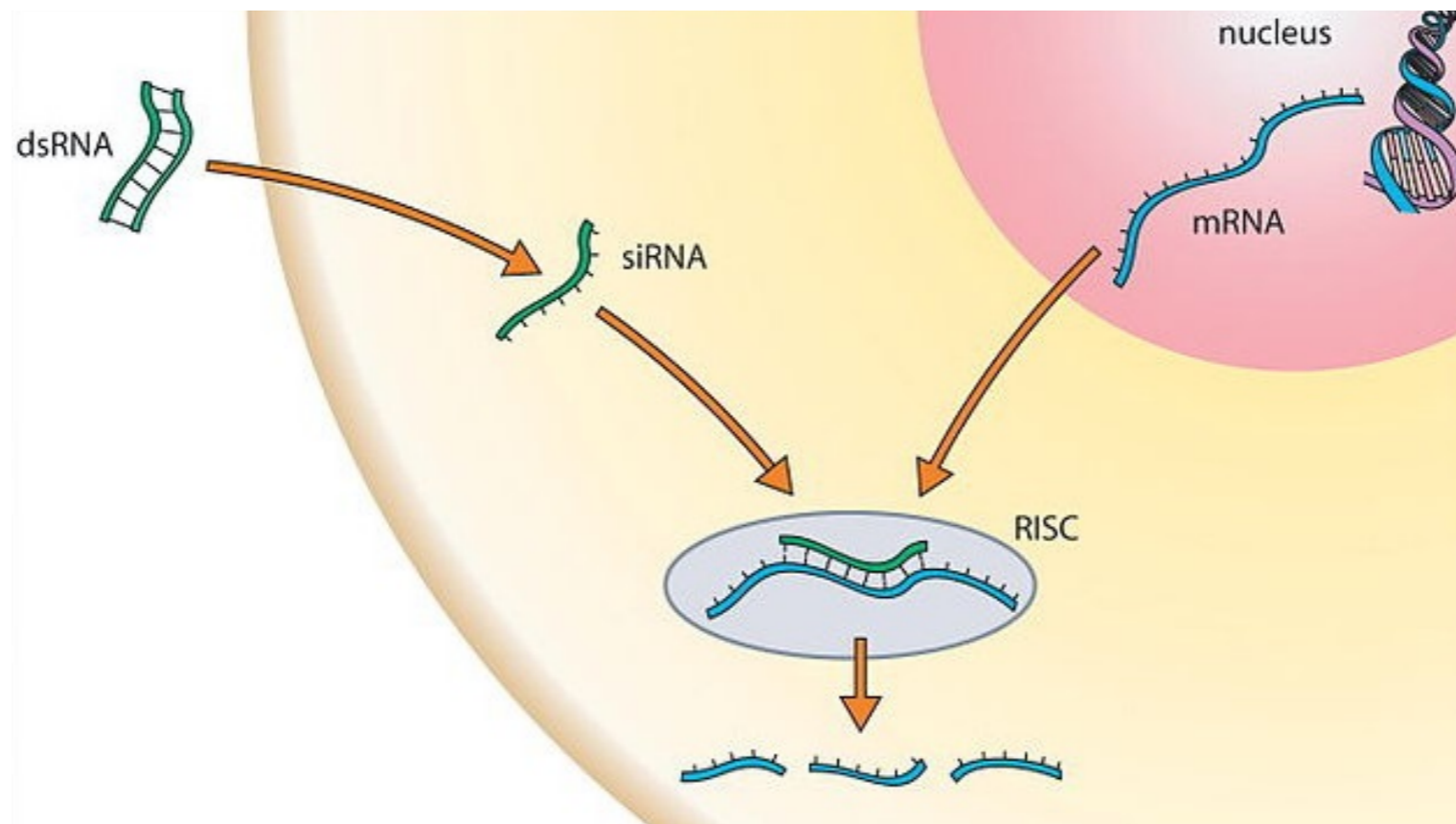
RNA-seq



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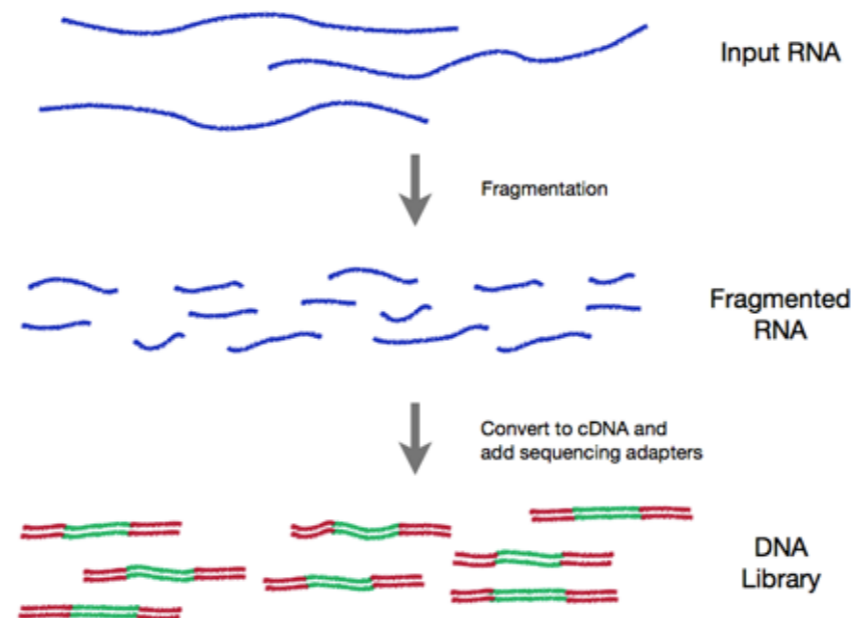
Protein
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analysis via
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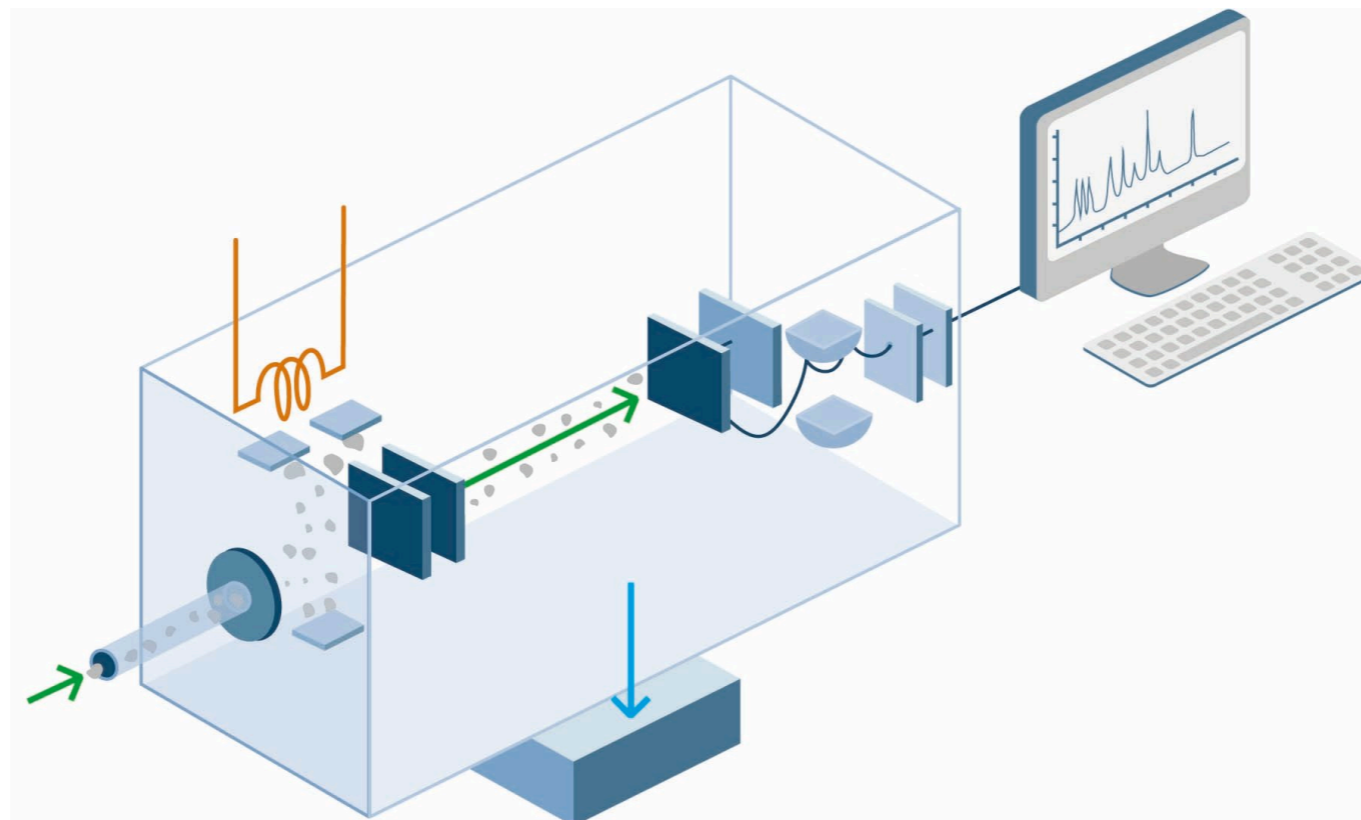
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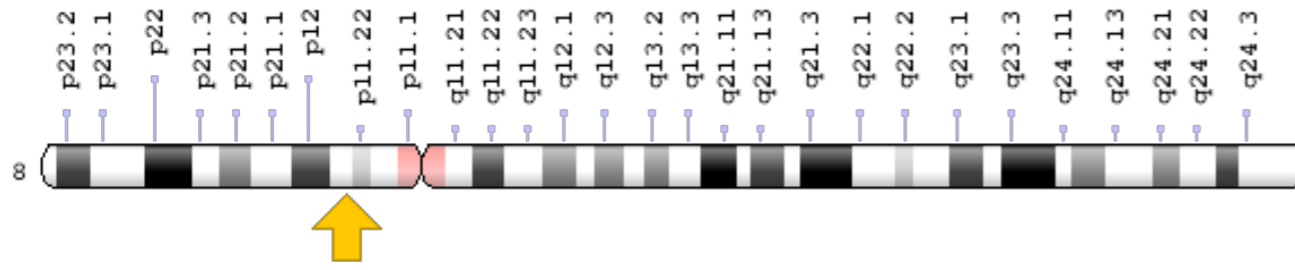
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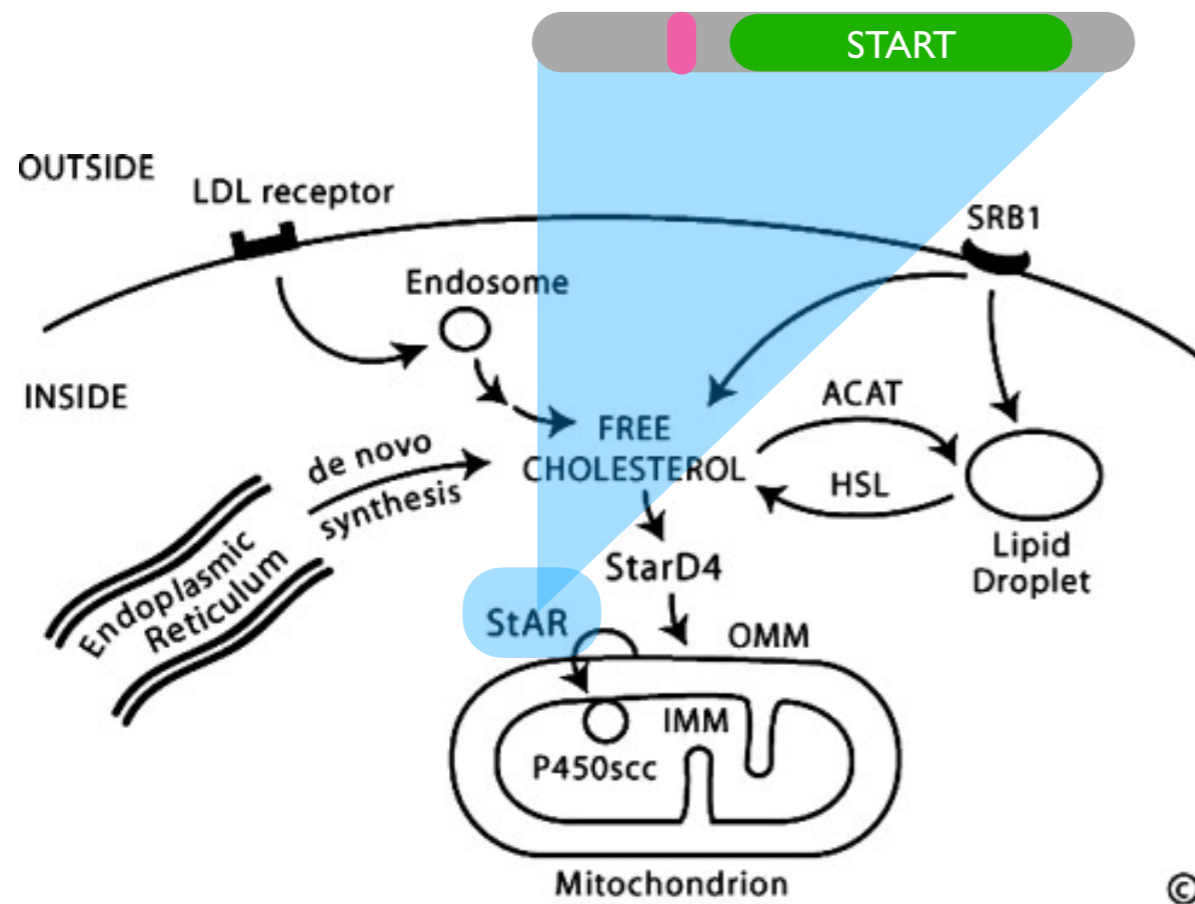
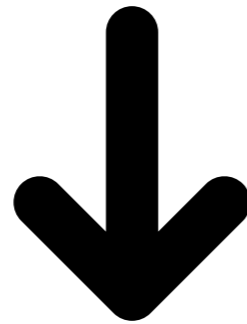
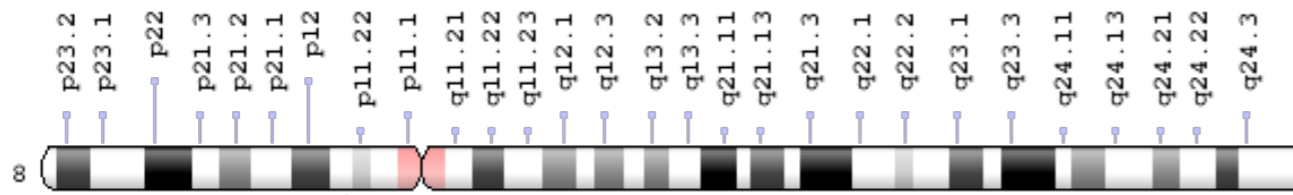
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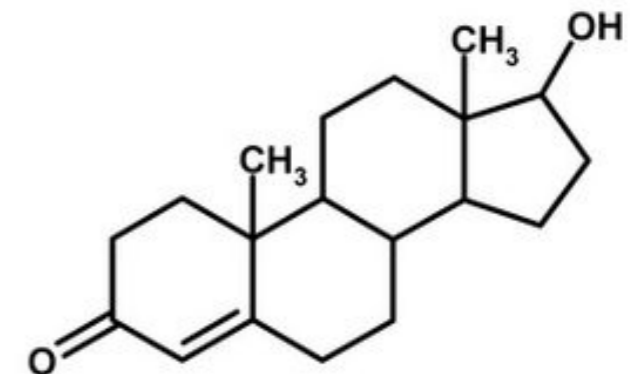
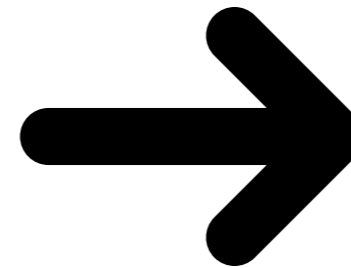
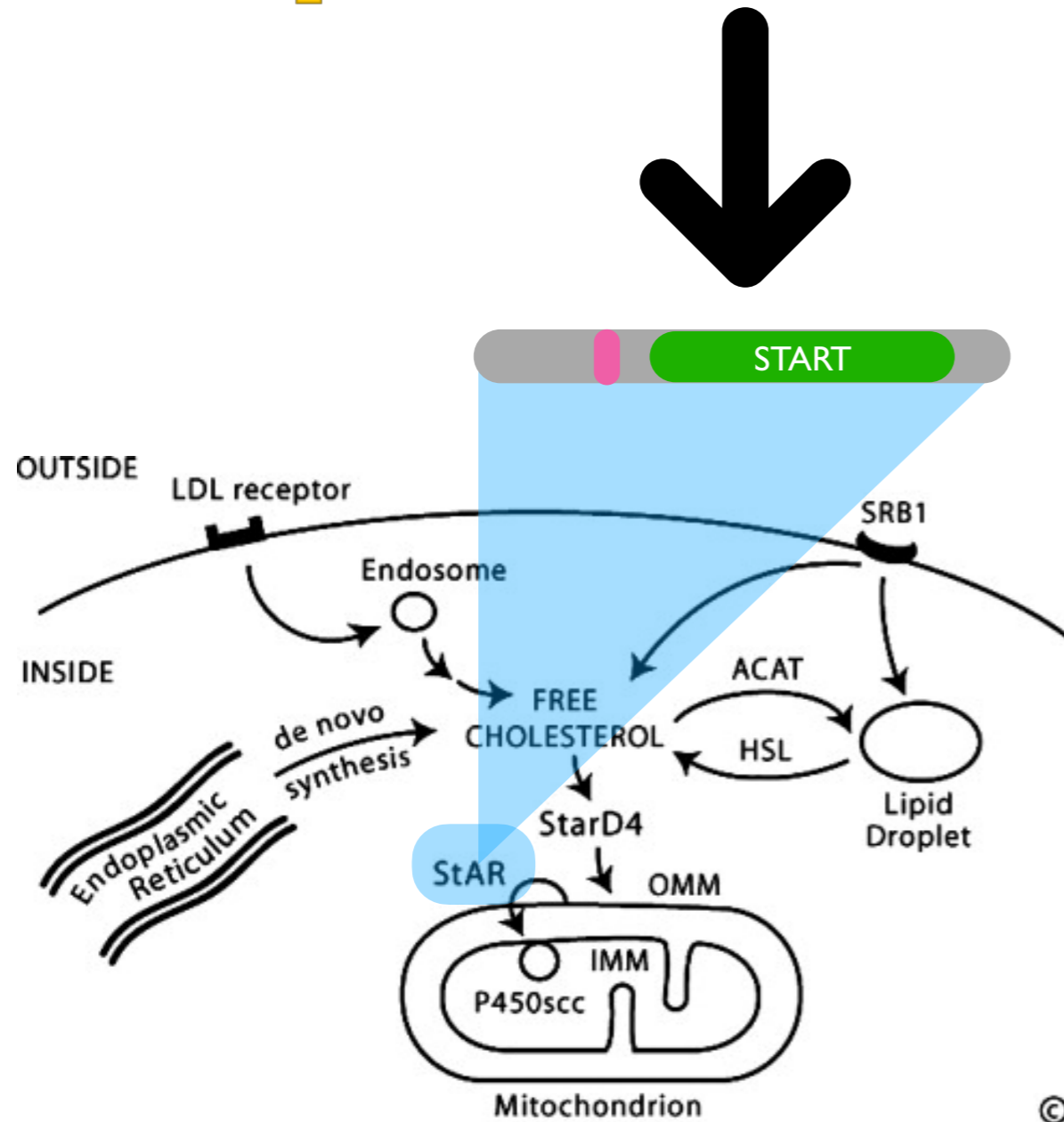
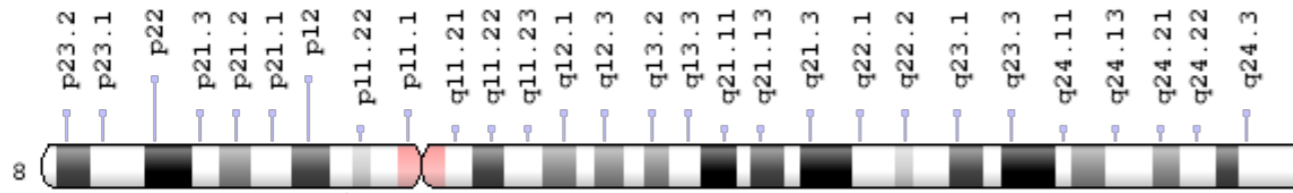
Summary



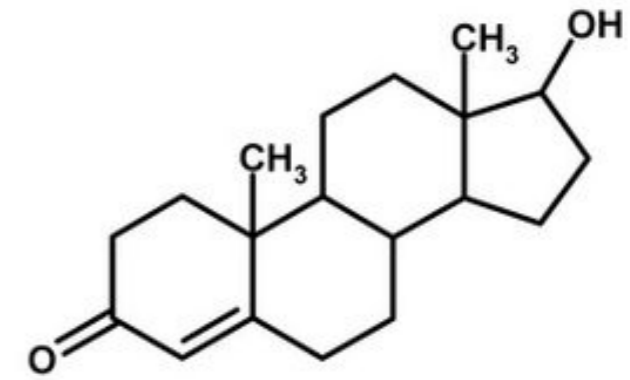
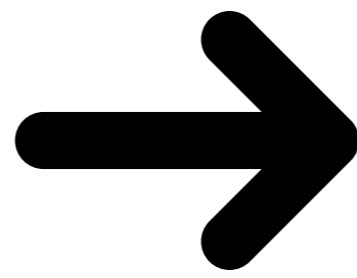
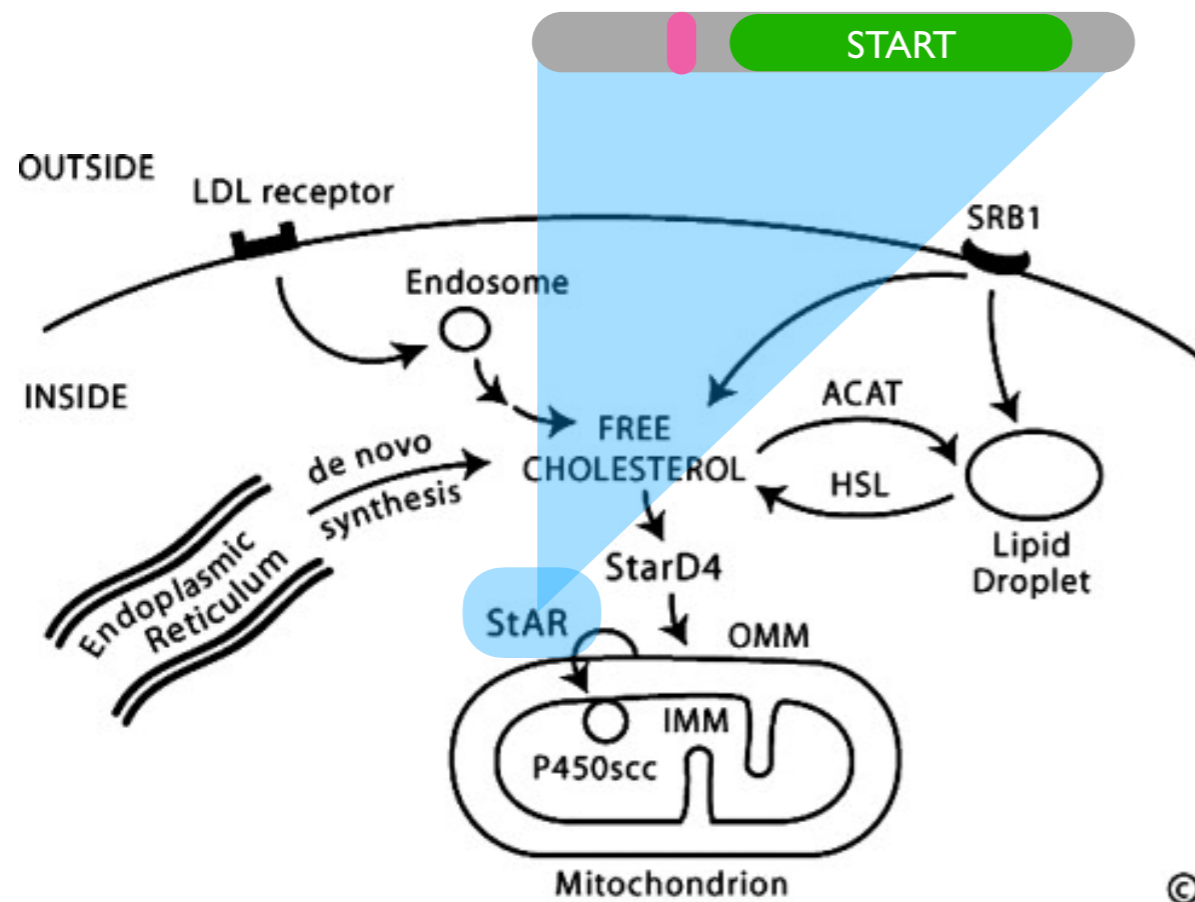
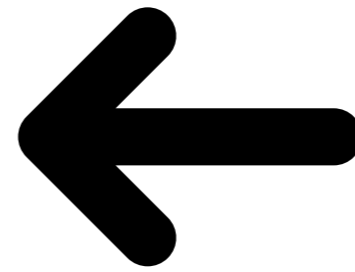
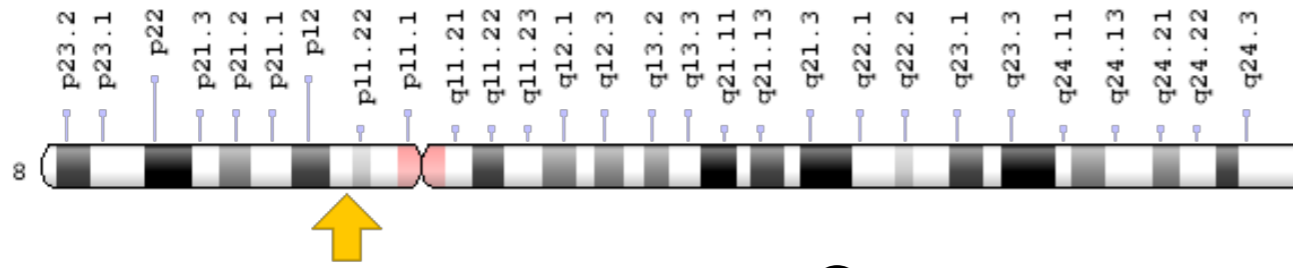
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Summary



References

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