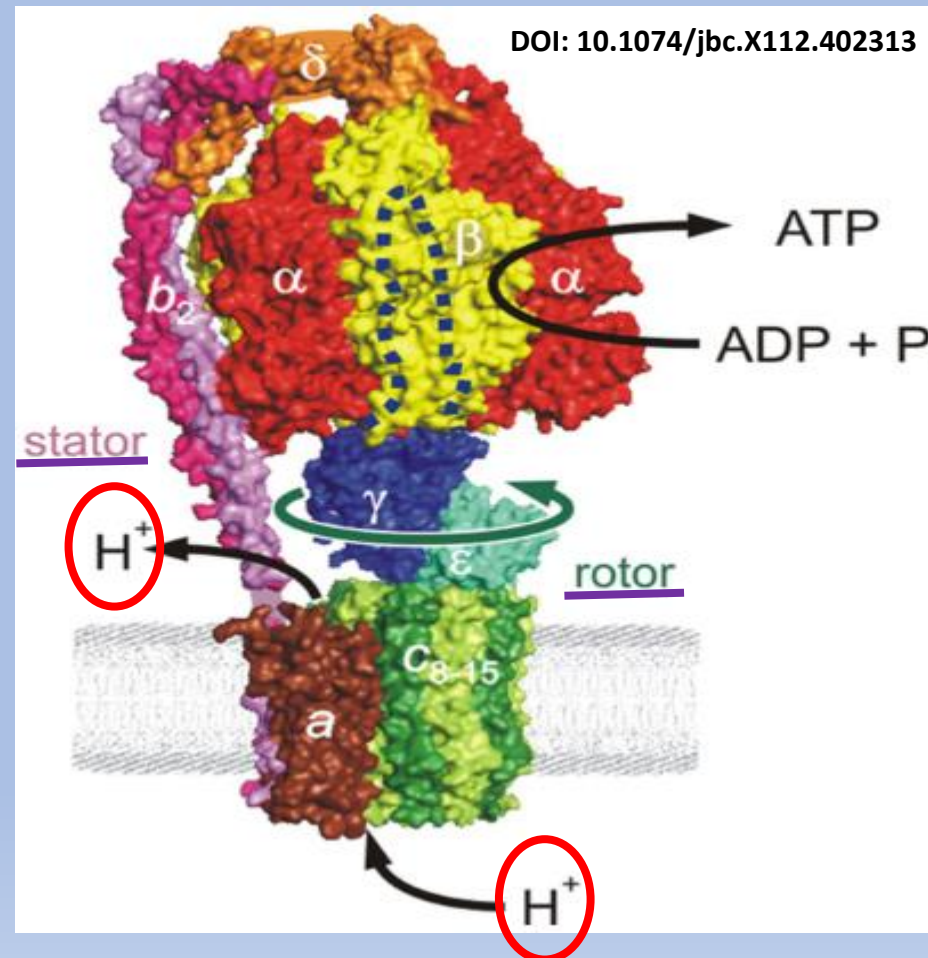


# mt ADENOSINE 5'-TRIPHOSPHATE SYNTHASE

Reading: <https://doi.org/10.1186/1742-4682-4-9>

inherent irreversible  
single proton tunnels  
(mtIIISPT)

**ATPase is the  
bottleneck of human  
health as nutritional  
deuterons break this  
mt enzyme**



it produces ATP from ADP  
and inorganic phosphate  
via the isotopic control of  
cellular energy

protons are consequently  
used for deuterium free  
inclusion zone water  
production with  $O_2$  after  
being transferred in the  
mt matrix

# ADENOSINE 5'-TRIPHOSPHATE SYNTHASE

*UNIVERSAL NANOMOTOR USER GUIDE*

- **water-producing ATPase nanomotors are, by their very nature, unidirectional tunnels for individual protons**
- **compromising this electron-coupled, inherent, irreversible single proton tunneling process to elementary oxygen by nutritional deuterons disrupts mitochondrial water formation, causing disease and shortening quality of life**

# ADENOSINE 5'-TRIPHOSPHATE SYNTHASE

*UNIVERSAL NANOMOTOR USER GUIDE*

- **ATPase is powered by the kinetic energy of the universal proton mass constant, determined by monoallelic inheritance (maternal cloning) with regard of its proton tunnel proteins without evolutionary footprints**
- **due to the above mitochondrial proton tunnels can not adapt to high deuterium containing sugar rich or processed plant-based food**

# DEUTERONS BREAK DOWN ATPase

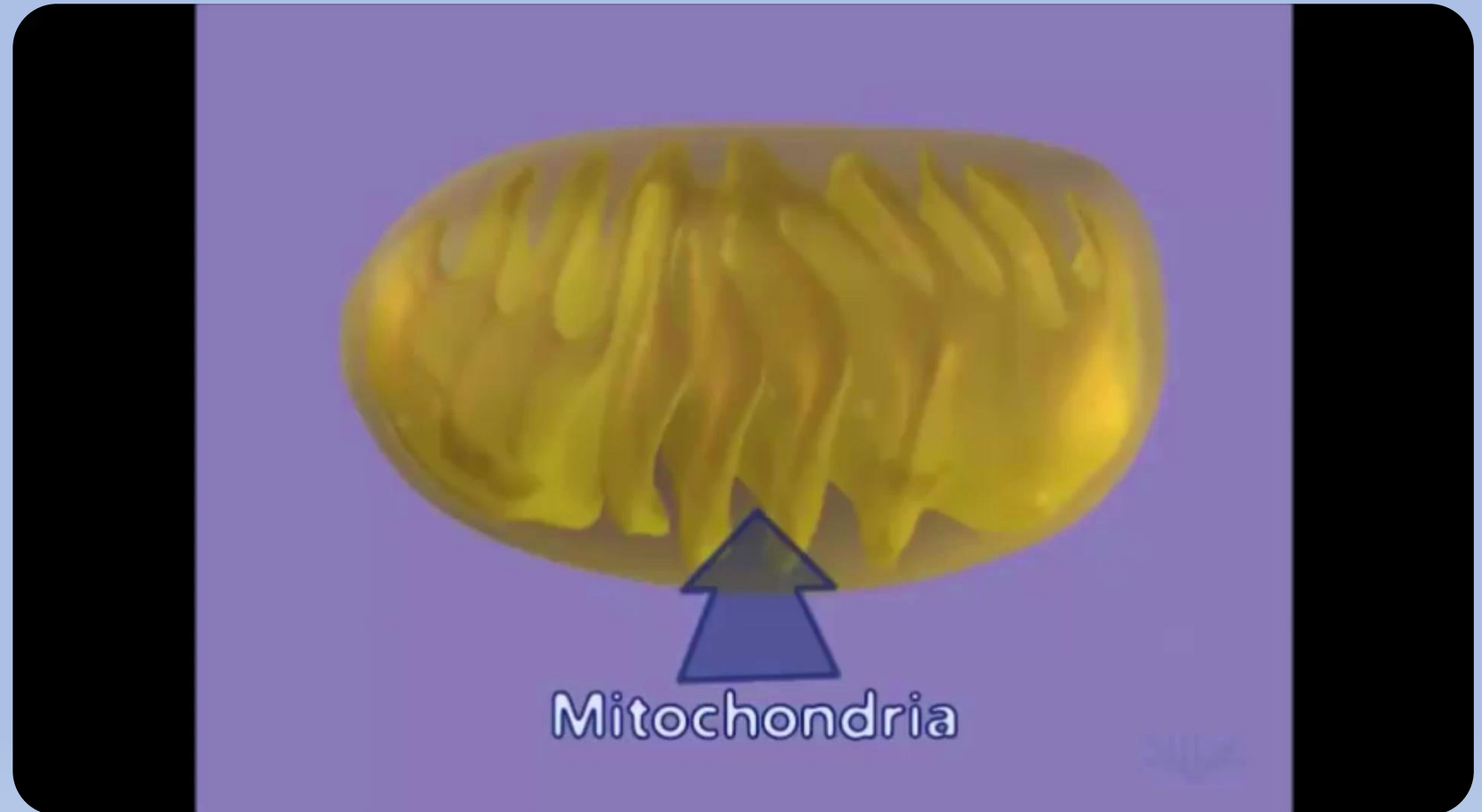
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see in motion  
how a  
deuteron  
breaks down  
ATPase:

<https://drive.google.com/file/d/1LBr1OW1altDY1Z8d0pNpegrvfPDKnMIS/view?usp=sharing>

Reading:

<https://doi.org/10.1186/1742-4682-4-9>



<https://youtu.be/3y1dO4nNaKY?si=DBJLIUbG1ycAqkr> (share and cite, modified by Eszter Anna Boros for educational purposes)

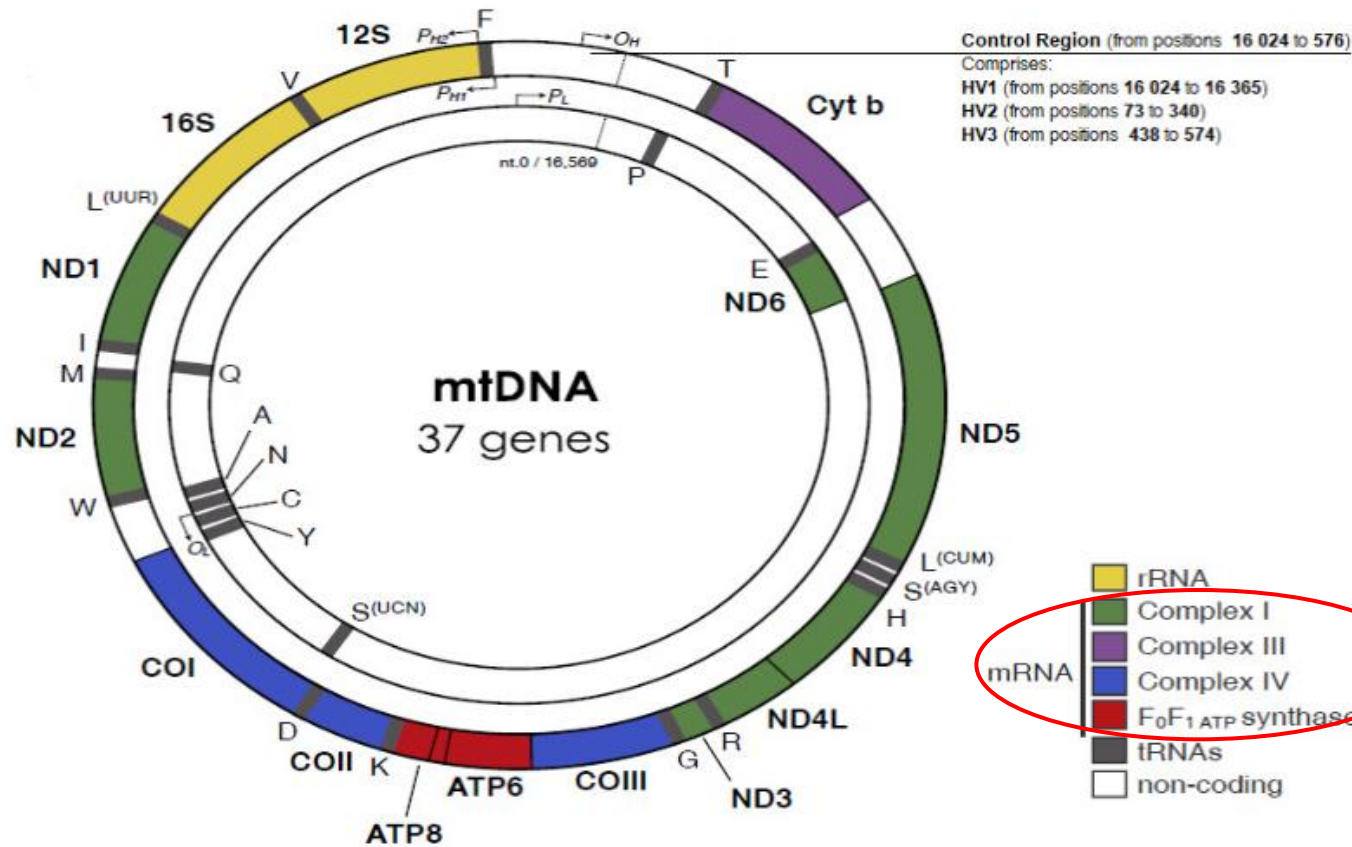
# ATP SYNTHASE – STRUCTURE/GENETICS

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- the same structure of ATPase nanomotors are present in all kingdoms of life<sup>1</sup>
- human mitochondria carry a single intron-free circular DNA with 16,568 basepairs<sup>2, 3</sup> and 37 genes that code 13 proton tunneling proteins

# MITOCHONDRIAL (MATERNAL) DNA

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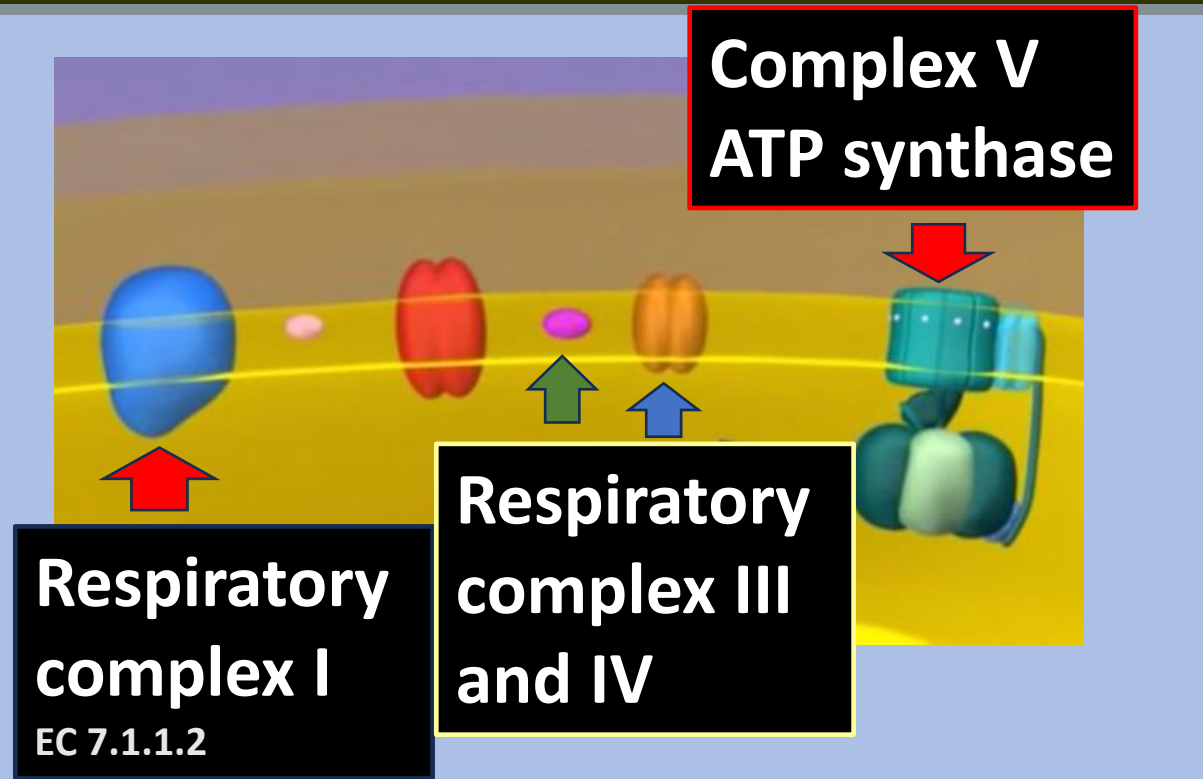
<https://ena.our-dogs.info/facts-sh.html>

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mitochondrial DNA  
preserves and  
transcribes ATPase  
proton tunneling  
proteins into  
mRNA **only**

# MITOCHONDRIAL PROTON CONTROL

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**proton**,  $e^-$  and **oxygen** harvesting complexes coded by mtDNA

proton loading onto the ATP synthase nanomotors is a strict mtDNA coded process



# MITOCHONDRIAL PROTON TUNNELS BY

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mitochondrial DNA (mtDNA) coded proton tunneling ATP synthase fueling proteins:

- 1 ATP synthase, **Fo** complex V subunit 8
- 2 ATP synthase, **Fo** complex V subunit 6
- 3-5 Cytochrome c oxidase, subunits 1-3 (complex IV)
- 6 Cytochrome b (complex III)
- 7-13 NADH dehydrogenase subunits 1-4L-6 (complex I)

these proteins have not been and can not be altered by evolution as they are monoallelic clones of maternal inheritance

# ATP SYNTHASE – GENETICS/PROTEOMICS

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- mitochondria-encoded proteins inherently gate out deuterons due to their size to supply protons only for ATPase
- the inner mitochondrial membrane is designed to harvest protons from nutrients by its NADH reductases (7-13) for the mitochondrial matrix compartment

# ATP SYNTHASE – FUNCTION

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- ATP synthase and/or decoupling proteins (brown adipose tissue) tunnel protons back into the matrix to react with oxygen during metabolic (living) water formation
- matrix water is likely the most deuterium-depleted (depleted) water source for highly differentiated eukaryotic cells during energy and molecule production

# ATPase PROTON TUNNELING IS PRESERVED

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- mitochondrial proton tunneling is preserved in biology due to monoallelic asexual maternal inheritance by the **13 proteins** coded by mtDNA
- all human mitochondria carried by the male gamete (sperm cell) are destroyed by the female gamete (ovum or egg cell) via its Corona Radiata and Zona Pellucida upon fertilization for the zygote to survive

# mtATPase CAN NOT ADAPT TO DEUTERIUM

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- humans adapted and utilize mitochondria as preferential ketosis powered natural carnivores
- human mitochondria can not adapt to high deuterium containing refined sugars and plant-based nutrients
- deuterium depletion is a shared biological responsibility among prokaryote gut microbes and epithelial cells<sup>1</sup>