

# VWF and VEGFA phylogeny in mammals

# VWF and VEGFA

- **Von Willebrand factor (VWF)** - a blood glycoprotein that promotes hemostasis, specifically, platelet adhesion. It is deficient and/or defective in von Willebrand disease and is involved in many other diseases, including thrombotic thrombocytopenic purpura.
- **Vascular endothelial growth factor A (VEGF-A)** is a dimeric glycoprotein that plays a significant role in neurons and is considered to be the main, dominant inducer of the growth of blood vessels. This specifically acts on endothelial cells and has various effects, including mediating increased vascular permeability, inducing angiogenesis, vasculogenesis, and endothelial cell growth, promoting cell migration, and inhibiting apoptosis

# Species

- *Sus scrofa* (pig)
- *Pongo abelii* (Sumatran orangutan)
- *Oryctolagus cuniculus* (rabbit)
- *Mus musculus* (house mouse)
- *Monodelphis domestica* (gray short tailed opossum)
- *Macaca mulatta* (Rhesus monkey)
- *Homo sapiens* (Human)
- *Felis catus* (domestic cat)
- *Equus caballus* (horse)
- *Canis lupus familiaris* (dog)

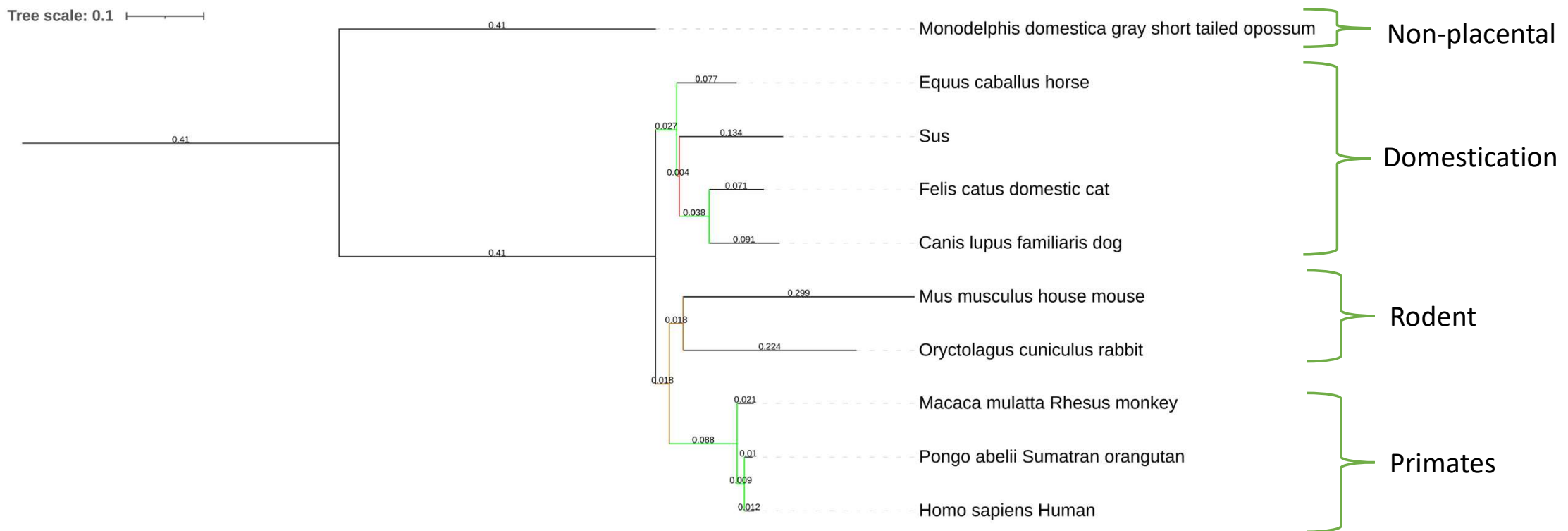
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- ***Monodelphis domestica* (gray short tailed opossum) - outgroup**
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# Methods

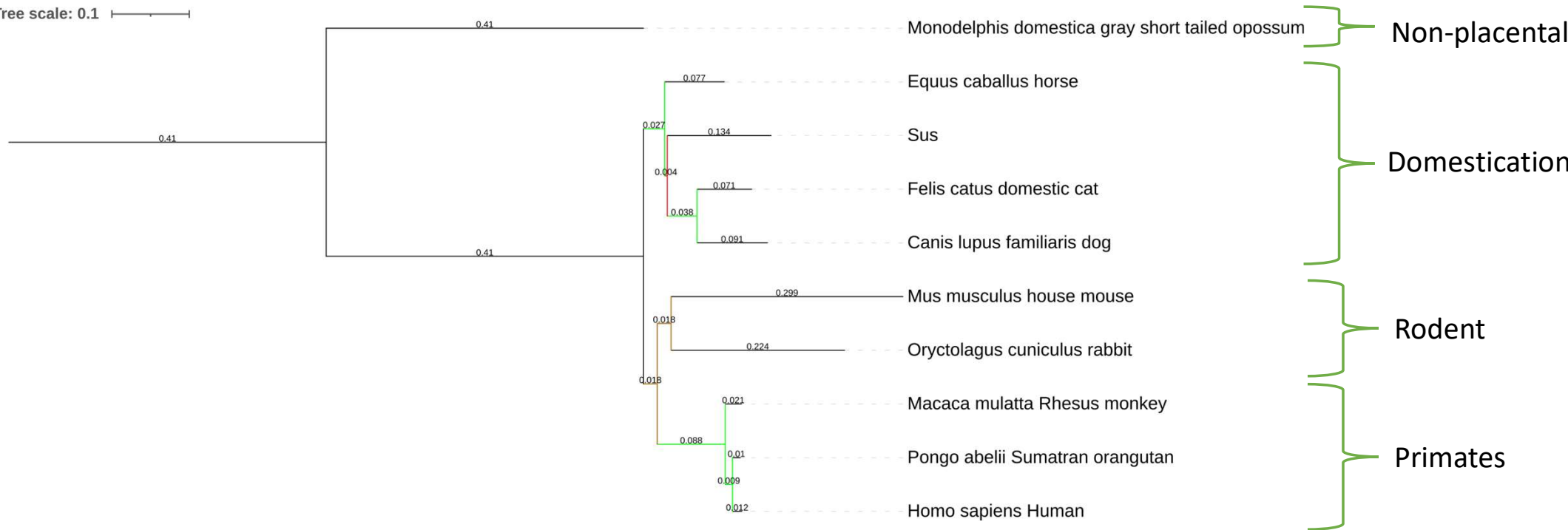
- Sequences – GenBank
- Alignment – MAFFT
- “Bayesian” tree – IQTree (ultrafast bootstrap) (actually distance method)
- Visualization - ITol

# VEGFA IQTree



# VWF IQTree

Tree scale: 0.1




# Conclusion

- **Primates Clustered**  
Human, Orangutan, and Rhesus monkey have close evolutionary ties.
- **Rodent Group**  
Mouse and Rabbit show distinct divergence due to rapid genetic drift.
- **Domestication Impact**  
Dog and Cat cluster separately, indicating human-influenced adaptations.
- **Species Adaptations**  
Unique branches for Horse and Pig highlight distinct habitat-driven evolution.
- **Outgroup**  
Opossum confirms distant relation to placental mammals.
- **MAIN POINT**  
Conservative genes shows similar evolutionary distances even in quite different species.



VWF IQTree

Load level of this queue: 

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