

# MICRORNAS IN VET MEDICINE

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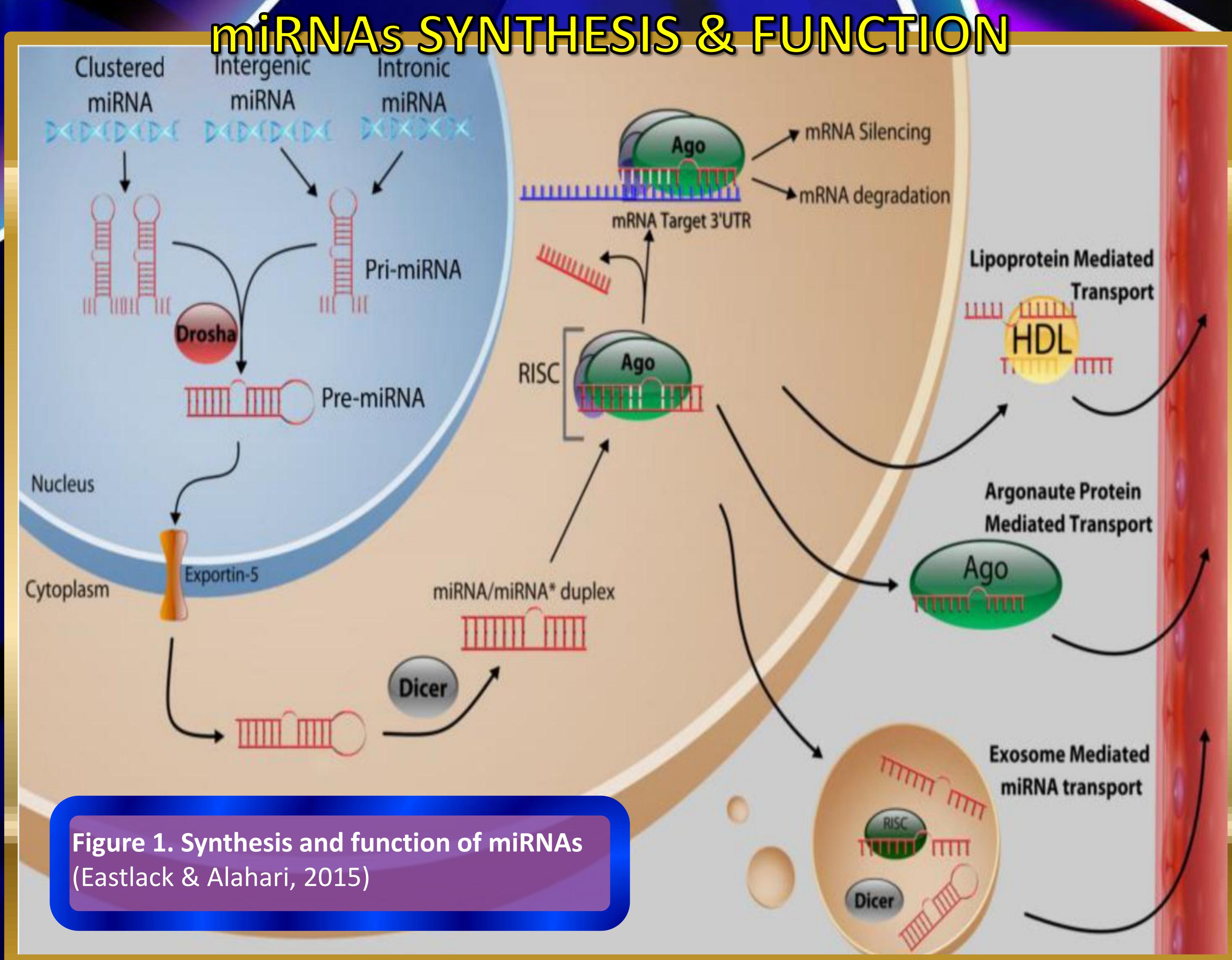
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## OBJECTIVES

- Compile and synthesize the basic information about miRNAs.
- Understand the function of the miRNAs, as well as the evolution, physiology, pathology, diagnostics and therapeutics.
- Identify miRNAs specifically involved in the vet medicine.

## MICRORNAS

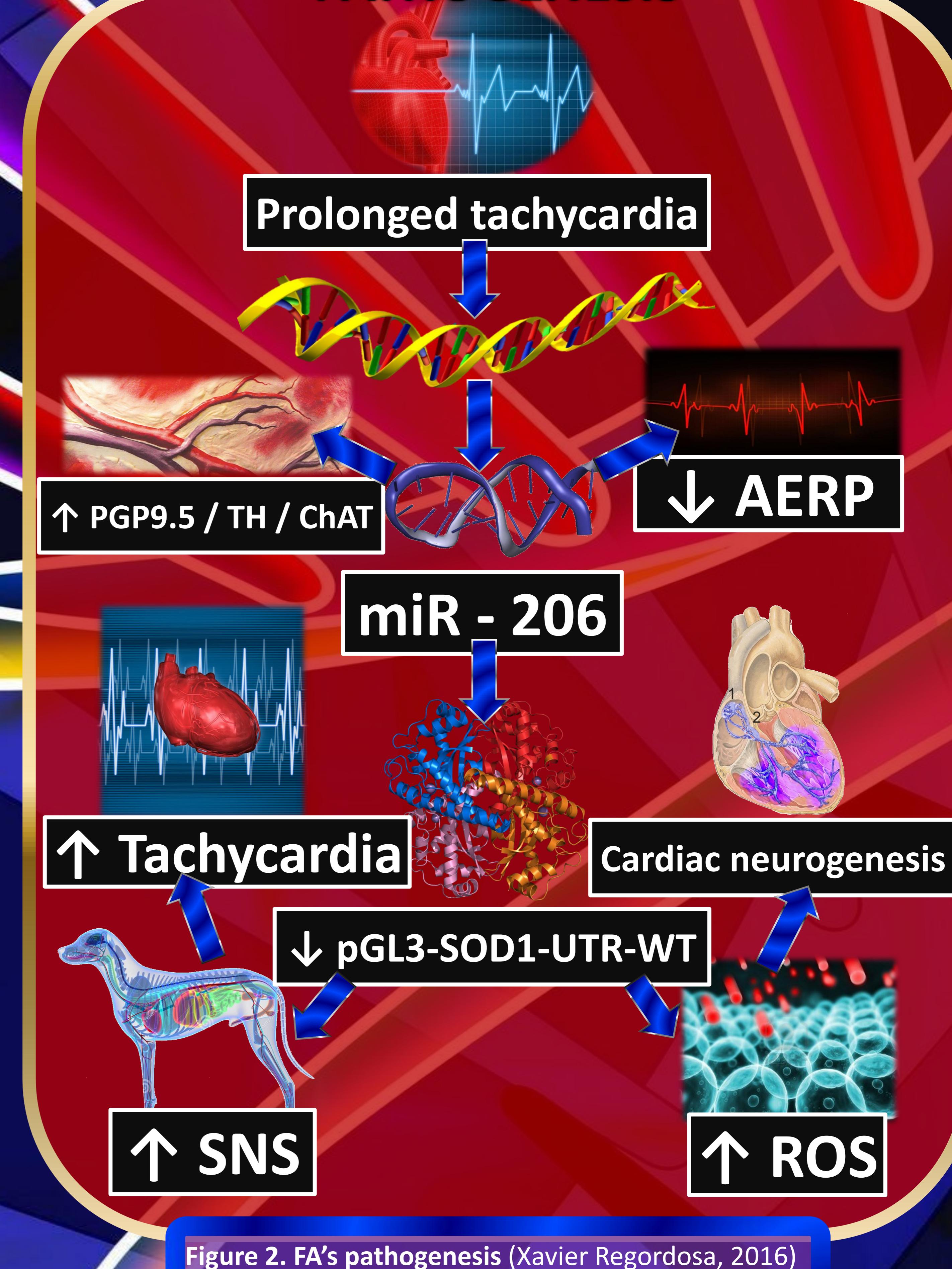
- Small single-stranded non-codifying RNA molecules ( $\approx 21$  to  $25$  nucleotides).
- Regulate the gene expression by RNA silencing and the regulation post-transcriptional by the route of the ribo-interference.
- Ancient and evolutionary component of vital importance in the genetic regulation
- One miRNA can have a great diversity of RNA targets, and every target can be regulated by multiple different miRNAs.
- Discovered in 1993 (*lin-4*  $\rightarrow$  *Caenorhabditis elegans*).
- Plants  $\rightarrow$  perfect matching / Animals  $\rightarrow$  the seed region .
- Quantified by a qRT-PCR, hybridized in microarrays, or by NGS
- Silenced by a complementary antagomir.



## ATRIAL FIBRILLATION IN DOGS

- AF  $\rightarrow$  disorder of the cardiac pace (in the electrical conductivity, generating chaotic depolarization and arrhythmic to level atrial).
- ANR  $\rightarrow$  involved in pathogenesis (promotes the formation of anomalous cycles, instigating AF).
- Arrhythmic miRNAs  $\rightarrow$  miR-206 is significantly increased.
- Forced expression of miR-206 promotes the ANR atrial and the AF  $\rightarrow$  miR-206 does shorten refractory effective period atrial (AERP).
- miR-206 also regulates elements as the FGF, Hmgb3, HIF-1 $\alpha$ /Fhl-1, and accelerates the nervous regeneration

## PATHOGENESIS



## CONCLUSIONS

- Regulation and deregulation of miRNAs concerns diverse levels of physiological and pathological processes. The knowledge of his properties and functions can allow the deepening of the physiopathology of many diseases (simultaneously, can be useful both in his diagnoses and in his treatments).
- The homology and common origin existing between many miRNAs of different species, can allow to understand better the evolutionary process and phylogenetic that has followed every organism (the evolution of many diseases too).
- Intensifying the study of this area in veterinary, allows to generate a synergique progress, obtaining by this way incredible advances in different aspects, improving the quality of life both of the persons and of the animals.

## REFERENCES

- Eastlack, S., & Alahari, S. (2015). MicroRNA and Breast Cancer: Understanding Pathogenesis, Improving Management. *Non-Coding RNA*, 1(1), 17–43. <http://doi.org/10.3390/ncrna1010017>
- Regordosa Vilajuana, X. (2016)