Main results obtained in 2019

1. Individual populations of cardiac cells have been isolated from mouse heart and characterized (figure 1)

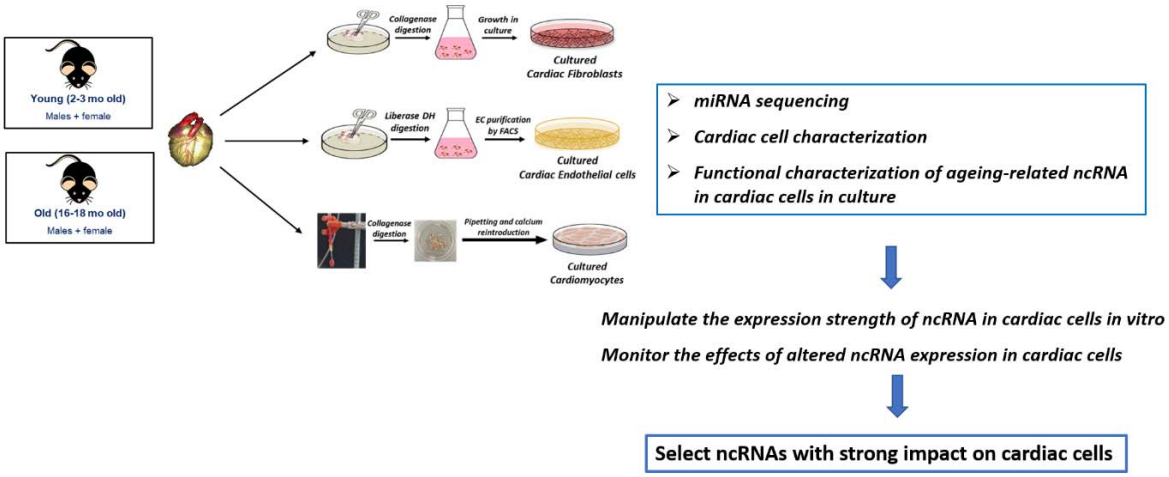
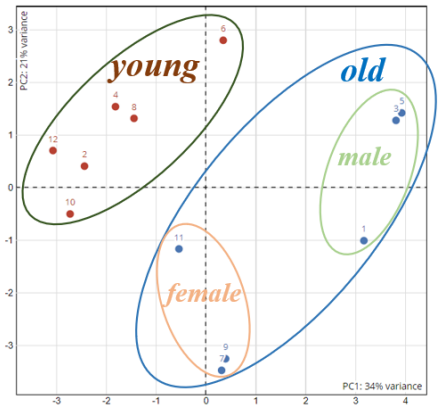


Figure 1. Flowchart for the evaluation of miRs in isolated cardiac cells from young and old mice.

2. Expression profiles of several miRs known from the literature to be involved in cardiac fibrosis have been determined n cardiac fibroblasts isolated from young and old C57Bl/6 mice;

3. The cardiac specificity of miR variations has been evaluated by determining the expression level of miRs in various organs prelevated from young and old mice;

4. Cardiac fibroblasts have been evaluated by miR sequenncing and important differences have been revealed between young and old groups, as well as between female and male old groups (figure 2);



Analysis based on 530 miRNAs

Figure 2. PCA analysis based on miRs in cardiac fibroblasts isolated from young and old mice.

3. Identification of several pathways putatively involved in cardiac fibrosis has been achieved, based on in silico analysis of miR targets and pathway enrichment analysis of predicted targets (figure 3).

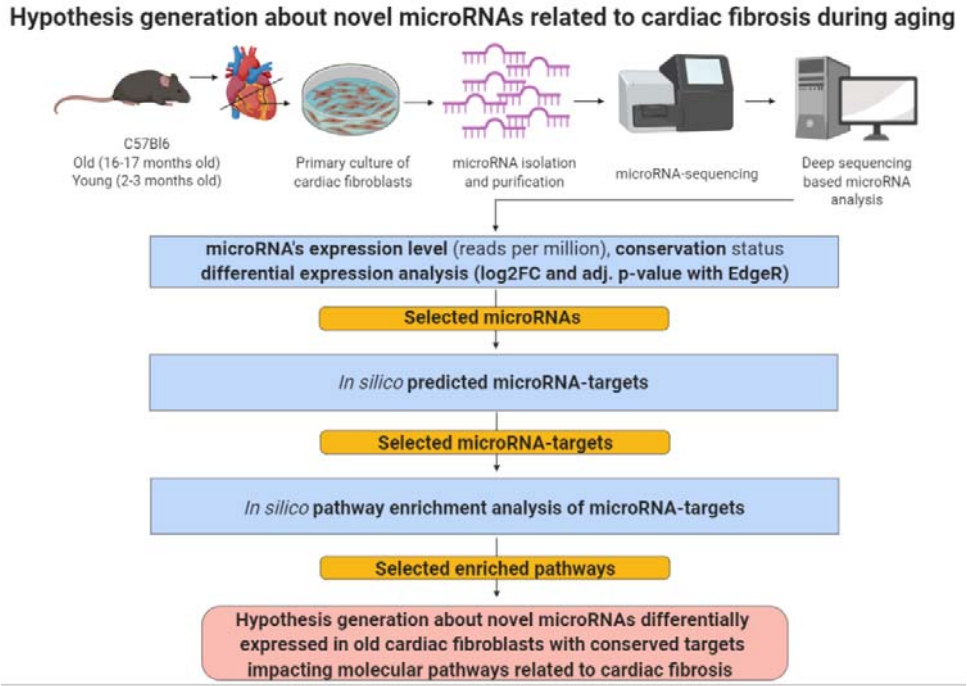


Figure 3. Flowchart for the identification of cardiac signalling pathways involved in natural ageing process based on expression of miRs in cardiac fibroblasts isolated from young and old mice.

Dissemination

1. Rusu E.G., Lupan A.M., Marinescu C., Preda M.B., Burlacu A. Influence of aging on the quality and dynamics of mouse cardiac fibroblasts in culture, poster presented at the Symposium ERA-CVD Joint Translational Calls, Riga, Latvia, May 13-17, 2019.
2. A-M. Lupan, E.G. Rusu, C.I. Marinescu, M.B. Preda, A. Burlacu. Fibrotic and hypertrophic microRNAs up-regulated during natural cardiac aging, poster presented at Basic Science Summer School, Nise, France, June 16-20, 2019.
3. Rusu E.G., Lupan A.M., Marinescu C., Preda M.B., Burlacu A. Influence of aging on the quality and dynamics of mouse cardiac fibroblasts in culture, poster presented at The 11th National Congress with International Participation and 37th Annual Scientific Session of Romanian Society of Cellular Biology, Constanta, Romania, 20-22 iunie 2019.