

# CONTENTS

RÉSUMÉ .....	3
ABSTRACT.....	5
ACKNOWLEDGEMENTS .....	7
ABBREVIATIONS.....	9
INTRODUCTION.....	13
I. The heart.....	13
I.I Cardiac tissue composition .....	14
I.II Cardiac cells .....	15
I.III Cardiac cycle .....	17
II. Myocardial infarction.....	18
II.I Cardiovascular diseases.....	18
II.II Myocardial infarction.....	19
II.II.I Cellular death phase .....	20
II.II.II Repair phase .....	21
III. Cardiac adipose tissue.....	26
III.I Adipose tissue .....	26
III.I.I White, brown, beige adipose tissue .....	27
III.I.II Adipogenesis.....	28
III.I.III Adipose-derived stem cells (ASCs) .....	30
III.II Cardiac adipose tissue.....	31
III.II.I Classification and anatomy .....	31
III.II.II Pericardial adipose tissue as beige adipose tissue .....	32
III.II.III Physiology of pericardial adipose tissue.....	33
III.II.IV Pathological implications of pericardial adipose tissue.....	34
IV. Fat-associated lymphoid clusters (FALCs) .....	36
IV.I Innate and adaptive immunity .....	37
IV.I.I Cells of the immune system.....	38
IV.II Formation of FALCs .....	42
IV.III Type 2 cytokine-producing innate lymphoid cells (ILC2s) .....	43

IV.IV FALCs in inflammation and immunity.....	45
V. Purinergic signalling.....	48
V.I Release in extracellular medium.....	48
V.II Metabolism of extracellular nucleotides .....	49
V.III Nucleotide receptors.....	50
V.III.I P2 receptors .....	51
V.III.II P2Y receptors .....	51
V.III.III The P2Y <sub>2</sub> subtype.....	53
AIM OF THE STUDY.....	56
RESULTS .....	57
I. P2Y <sub>2</sub> nucleotide receptor is a regulator of the formation of PAT and its FALCs .....	57
Study of the role of P2Y <sub>2</sub> receptor in the formation of PAT .....	57
Study of the contribution of P2Y <sub>2</sub> in the formation and composition of FALCs in PAT .....	58
Study of the impact of P2Y <sub>2</sub> on the cells composition changes in pericardial FALCs after MI...	59
Additional figures (not included in the article) .....	71
- Effect of lack of P2Y <sub>2</sub> on adipogenesis-linked genes expression is limited to PAT .....	71
- Lack of P2Y <sub>2</sub> does not affect ILC2s population or B1/B2 composition in FALCs .....	72
- Total FALCs area percentage is unchanged in P2Y <sub>2</sub> -deficient mice.....	72
- P2Y <sub>2</sub> lack does not affect B cell differentiation and maturation .....	73
- Infarct size 24 hours after LAD is not affected by absence of P2Y <sub>2</sub> .....	75
- PAT size increases after MI in both WT and P2Y <sub>2</sub> -null mice .....	75
- Reduced leukocytes number in P2Y <sub>2</sub> -null mice is restricted to PAT.....	76
II. Pericardial AT mass is correlated with age and sex.....	80
DISCUSSION AND PERSPECTIVES .....	81
BIBLIOGRAPHY.....	92
ANNEX 1.....	100