Glucose is the primary energy source for cells, essential for the proper functioning of the entire body and supporting key metabolic and physiological processes. Maintaining an appropriate blood glucose level is therefore one of the cornerstones of good health. Blood glucose levels are precisely regulated by two hormones produced in the pancreas: glucagon and insulin. These hormones work in opposition to keep glucose levels stable. During situations that require mobilization of energy reserves, such as physical activity or fasting, pancreatic α cells release glucagon, which raises blood glucose levels. In contrast, after a meal, pancreatic β cells produce insulin, which facilitates the transport of glucose into insulin-sensitive cells, particularly skeletal muscle and fat cells. Here, glucose is either used as an energy source or stored for later use. This regulatory mechanism allows the body to quickly adapt to changing energy demands, whether in states of energy deficit or surplus. Disruptions in this system can lead to severe metabolic disorders, such as diabetes and obesity. As individuals age, their ability to regulate blood glucose levels declines, significantly increasing the risk of developing these conditions. Interestingly, recent studies suggest that platelets, primarily known for their role in blood clotting, also contribute to maintaining glucose balance by stimulating insulin secretion. However, this function of platelets diminishes with age, potentially exacerbating metabolic issues observed in older individuals. The goal of this project is to investigate the mechanisms by which platelets influence insulin secretion and regulate blood glucose levels. Particular attention will be given to changes that occur during aging and how they impact glucose regulation. The findings are expected to expand our understanding of the role of platelets in glucose homeostasis and could pave the way for the development of innovative therapeutic strategies targeting metabolic disorders, especially in older populations.