It has been well recognized that the prenatal environment, including maternal nutrition and metabolic status, influences the offspring's susceptibility to obesity or chronic disease in later life. In particular, a number of epidemiological studies have established a link between intrauterine exposure to maternal hyperglycemia and increased risk for developing obesity in childhood, adolescence or adulthood. Gestational diabetes mellitus (GDM), defined as glucose intolerance with onset or first recognition during pregnancy, is the most common cause of maternal hyperglycemia in pregnancy, affecting a growing number of pregnant women worldwide. Its prevalence will likely continue to rise along with increasing rates of prepregnancy obesity, a major risk factor for this condition, perpetuating a cycle of obesity. The pathways underpinning developmental programming of obesity in response to intrauterine adversities including maternal hyperglycemia are not yet clear. A growing body of evidence coming from animal and human studies suggests that epigenetic changes might be central to the underlying molecular mechanisms.
The second issue which is in the focus of the research is the role of dietary habits in preventing T1DM deterioration has been well documented. Studies have shown that vitamins D and E, nicotinamide and polyunsaturated n-3 fatty acids can have protective effect during and after diabetic pregnancy...
Frequent dietary fish intake reduces the risk of diabetes development, probably owing to the high content of n-3 acids. Diet rich in n-3 fatty acids such as eicosapentanoic (EPA) and docosahexainoic (DHA) is also associated with lower prevalence of cardiovascular disease and significantly longer life expectancy in some other populations, e.g., Japan. Dietary supplementation of long-chain n-3 polyunsutared fatty acids (LC n-3 PUFAs) can have favorable effect on preserving β-cell function with time. Fish oil added to baby formulations reduces the prevalence of T1DM owing to the action of EPA and DHA and vitamin D.
In order to perform all ongoing studies in State Referral Centre for Diabetes in Pregnancy we have started bio-banking procedure 30 years ago and we are the first and only academic bio-bank for the diabetes in pregnancy in the state of Croatia.