Circu.Pre.Can

Identification of CIRCUlating miRNAs PREdictive of CANcer development in Kidney transplanted patients: a search for new biomarkers

UNIVERSITÀ CATTOLICA del Sacro Cuore

Bellvitge Hospital

MEDICAL UNIVERSITY OF VIENNA

НИВЕРСИТЕТСКА БОЛНИЦА АЛЕКСАНДРОВСКА

biogem s.c.ar.l.

Partners

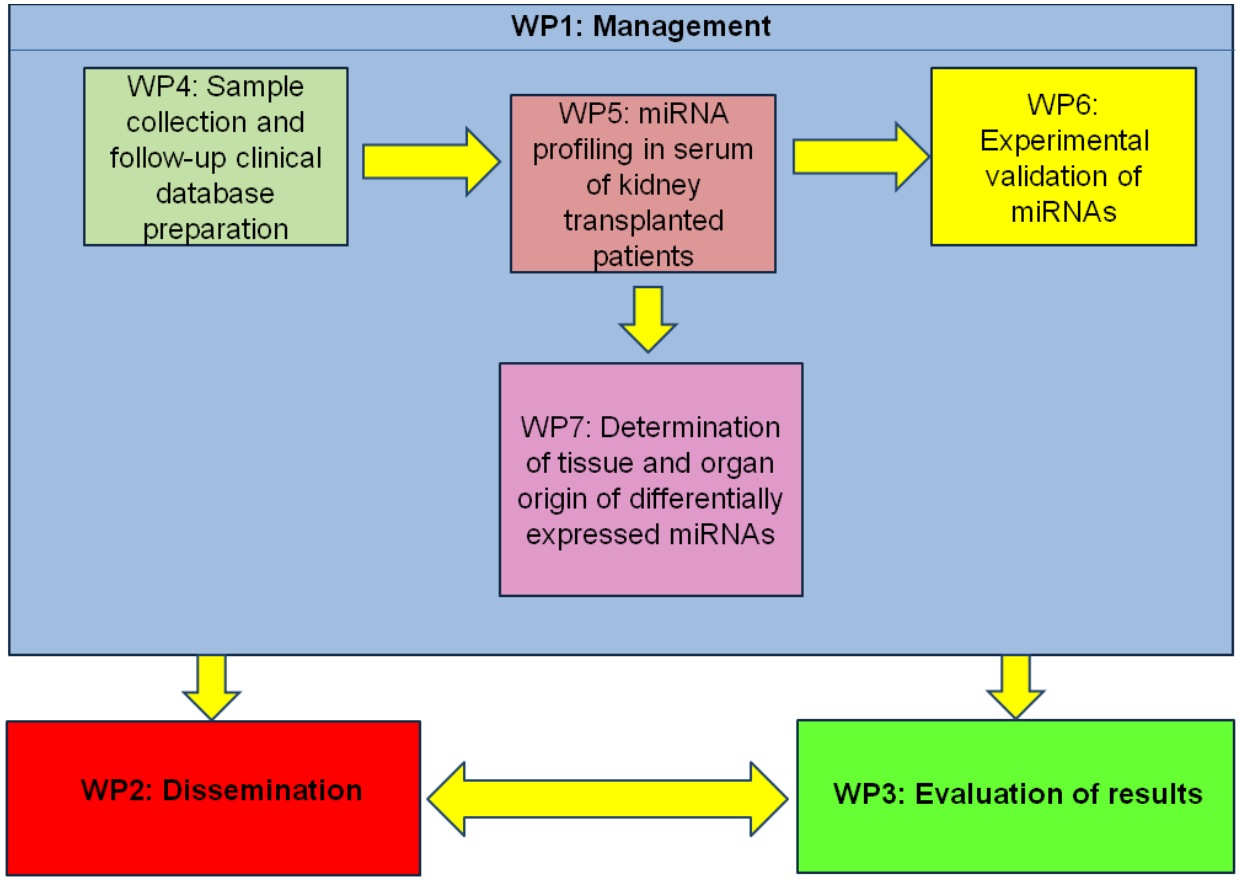
- Biogem S.C.A.R.L., Italy
- Department of Surgery, Catholic University of the Sacred Heart, Rome, Italy
- Department of Nephrology, Transplantation and Internal Medicine, Medical University of Silesia in Katowice, Poland
- Dialysis & Renal Transplant Unit, Nephrology Department, Hospital Universitari de Bellvitge, Hospitalet, Barcelona, Spain
- Department of Nephrology and Dialysis, Internal Medicine III, Medical University of Vienna, Austria
- Clinic Of Nephrology And Kidney Transplantation, Aleksandrowska University Hospital, Sofia, Bulgaria

Participants

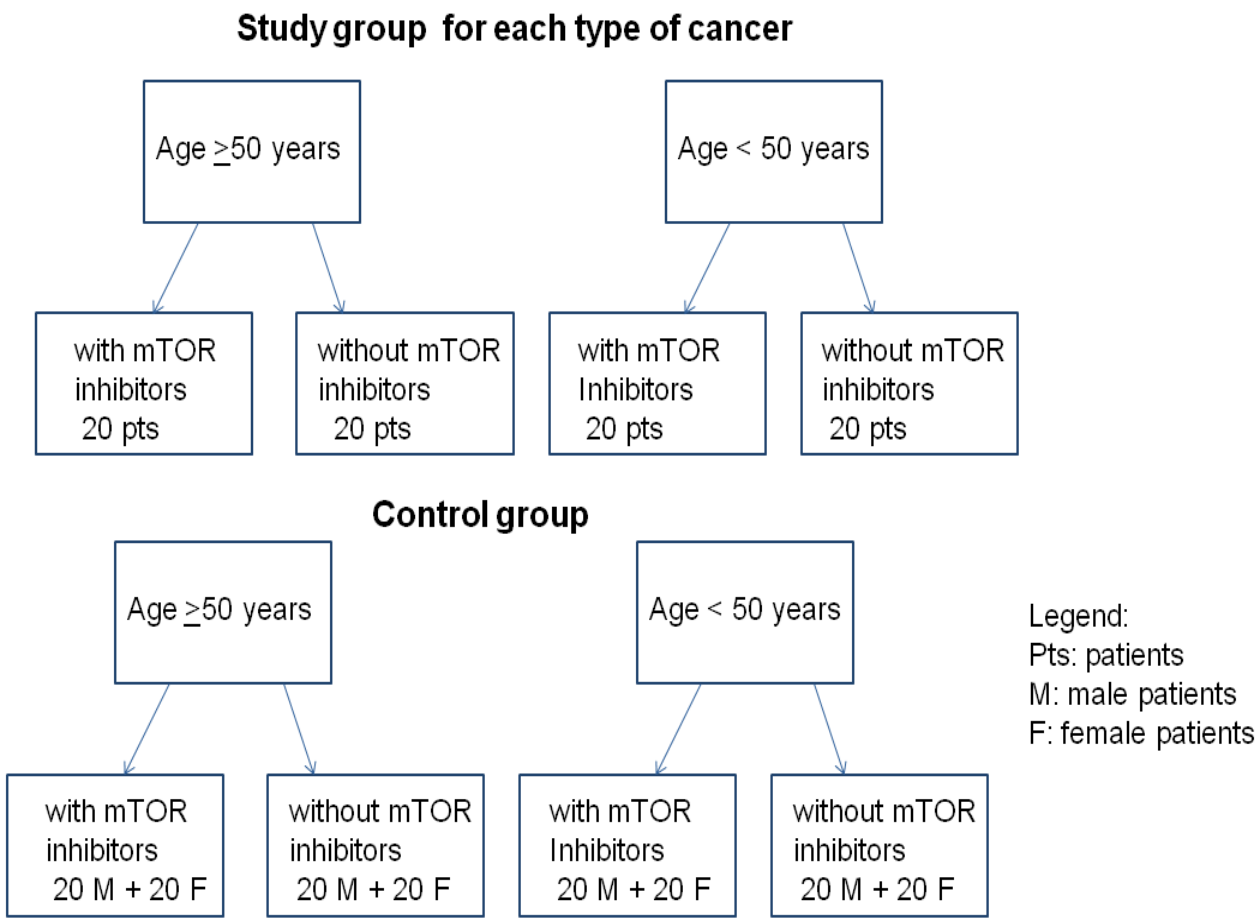
Specific aims

- Generate a biobank of serum collected from patients before renal transplantation and after detection of cancer development
- To generate serum miRNA expression profile
- Validated miRNA candidates as biomarkers

Consortium structure



Study design



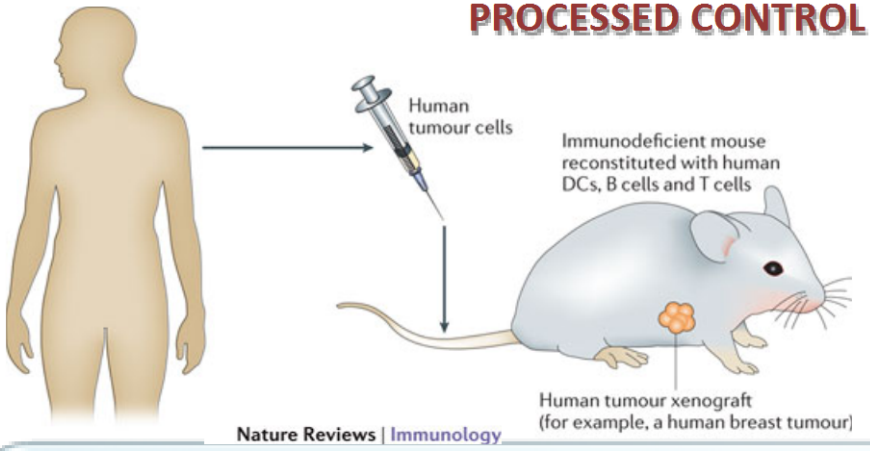
Study design

- miRNA profiling
  - miRNA expression analysis
  - miRNA SNPs analysis

- miRNA validation
  - large cohort serum samples
  - kidney and cancer tissue *in situ* hybridization

Follow-up

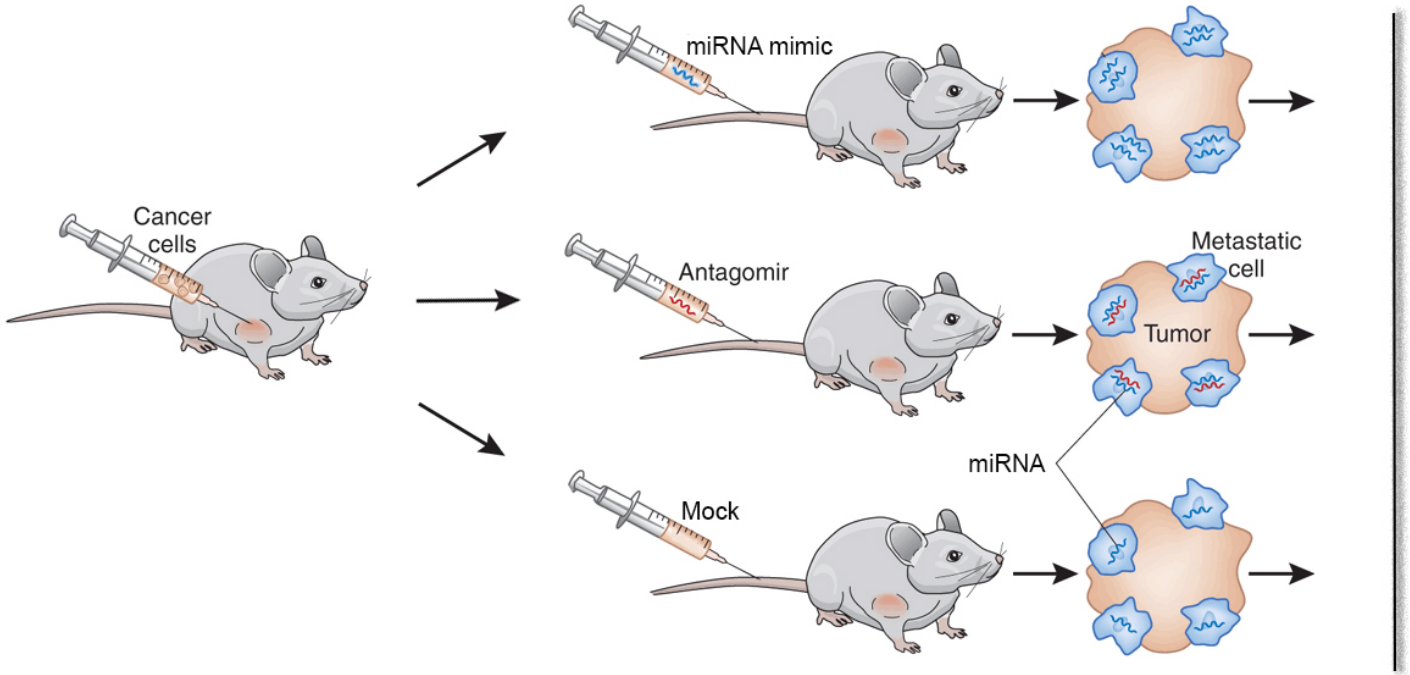
HETEROTRANSPLANTATION OF HUMAN CANCER CELLS OR TUMOUR BIOPSIES INTO IMMUNODEFICIENT RODENTS (XENOGRAFT MODELS): PROCESSED CONTROL



- **When the tumor reaches 1.5 cm in diameter, it can be excised, dissected into 5 mm cubes and transplanted into additional mice using the same procedure.**
- **Tumor characterization to ensure that it is derived from the starting material. The most accurate method is to harvest genomic DNA from both the primary sample and the established xenograft tumor. DNA samples can be analyzed by single-nucleotide polymorphism (SNP) array to determine whether they arise from the same sample.**
- **The xenograft can be transplanted into additional mice for chemosensitivity testing.**

Follow-up

In vivo determination of the anticancer effects of miRNAs or antago-miRNAs



- Mice survival
- Tumor growth delay
- Tumor weight inhibition
- Vascularisation anaysis
- Toxicological profile
- Molecular profile
  - apoptosis
  - angiogenesis
  - leukocytes infiltration
  - signal trunsduction

Outcomes

- Improvement of the safety and efficacy of renal transplantation therapy
- New assessment methodology and follow-up protocols for kidney transplanted patients with high risk to develop cancers