1 Programme Prevention

1.1 Objectives and research area

The GROW programme Prevention (Programme 1) was established in 2014 as a merger of the former GROW programme Epidemiology and prevention and the Toxicogenomics programme originating from NUTRIM-School of Nutrition and Translational Research in Metabolism.

1.1.1 Vision, mission and objectives

With cancer incidence increasing worldwide, the importance of cancer prevention is becoming ever more obvious. Increasing cancer survival rates have resulted from earlier detection and better treatment, yet the health and wellbeing of the growing population of cancer survivors is of major concern. In order to manage the growing burden of disease and the associated health care costs, the need to shift our attention towards prevention of disease and improving the quality of life and preserving the level of functioning of cancer survivors is undisputable. This perspective was also recently advocated by Prof. dr. Chris Wild, International Agency for Research on Cancer (IARC), during his inauguration as the 2018 TEFAF Oncology Chair : “No society can treat its way out of cancer, but the efforts put into treatment versus prevention are woefully unbalanced”. In fact, the ultimate preservation of function in cancer patients is preventing cancer.

Vision

The vision of the programme Prevention is to prevent cancer and its consequences by generating knowledge on environmental and lifestyle factors that affect the development and progression of cancer. For this purpose the full potential of epidemiological data sets, innovative data analysis techniques, advanced cell technologies and omics platforms are being exploited.

Mission

The mission of the programme Prevention is to establish the potential role of environmental factors and lifestyle in cancer development and progression in order to develop targeted strategies for disease prevention and improvement of quality of life and preservation of functioning.

Objectives

The objectives of the programme Prevention are:

1. To conduct research that covers the entire field of prevention, including the investigation of determinants of cancer risk (primary prevention), early detection of cancer (secondary prevention) and determinants of patient-reported-outcomes (a.o. quality of life (QoL)), functioning, and prognosis in cancer survivors (tertiary prevention).
2. To conduct innovative multidisciplinary research, applying approaches such as toxicogenomics, (molecular pathological) epidemiology, molecular and systems biology,

and bio-statistics and -informatics to a broad variety of data from (ongoing) observational, human experimental, and laboratory studies.
3. To maintain and expand strategic collaborations, both locally, nationally and internationally with academic, clinical, paramedical and industrial partners.
4. To secure a sustainable infrastructure for data collection, biomaterials, and management of the cohort studies and other data collections, which have already proven to be invaluable for our research in cancer prevention and cancer survivorship.
5. To contribute in translating our research outcomes in targeted preventive strategies to be applied by policy makers, the industry, clinical practice and educational curricula, in order to reach the general public.

1.1.2 Strategy and research area

Strategy

In order to achieve the above mentioned objectives the programme is currently following the strategy below:

1. Over the years a strong track record has been developed in epidemiological and toxicogenomics research in the field of cancer prevention. The strategy is to uphold and expand this to cancer prognosis and cancer survivorship.
2. Innovative multidisciplinary research is at the core of our research lines. Various (multiple-)omics technologies and novel molecular epidemiologic approaches are developed and applied. A high-end research environment and infrastructure has been developed, including the Maastricht Centre for Systems Biology (MaCSBio), the Genome Centre (Genome Services Maastricht UMC+), the Maastricht MultiModal Molecular Imaging institute (M4I), the Institute for Technology-Inspired Regenerative Medicine (MERLN), Institute for Data Science (IDS) and the ultra-high-field MRI centre Scannexus. This infrastructure offers unique opportunities for the multidisciplinary development of a molecular epidemiological and toxicogenomics approach to the most sophisticated cancer prevention research.
3. Longstanding collaborations with multidisciplinary partners are multipliers for the quality of our research in cancer prevention. Examples of internal collaborations are the longstanding interaction with molecular biologists and pathologists from Programme 3 regarding molecular characteristics of cancer. In addition, we are expanding our strategic collaborations locally with clinicians and other experts to maximize the research opportunities. Regarding (inter)national collaborations (see paragraph 1.3.3.4), several strong consortia have been built over the years that form a continuous impetus for international funding options within ongoing research lines. (Inter)national collaborations, allowing the expansion of our cohorts and datasets, have moved science forward for many years. The same holds for collaborations in the field of drug- and chemical safety, focusing on the development of improved in vitro toxicity testing.
4. It is essential to secure the continuously expanding infrastructure for data collection, storage of biomaterials, and data management of the ongoing cohort studies. Available local and national infrastructures are being used as much as possible, including the MEMIC-centre for data and information management, the biobank Maastricht UMC+,

BBMRI (Biobanking and BioMolecular resources Research Infrastructure), and TraIT (Translational research IT).

5. To enable translation of our research outcomes into implementable preventive strategies, we interact with public bodies and governmental agencies (i.e. the Dutch Cancer Society (KWF), International Agency for Research on Cancer (IARC), the Dutch Health Council (*de Gezondheidsraad*)) that are responsible for public health recommendations regarding cancer prevention. In addition, by collaborating with industrial partners from the food, chemical, cosmetics and pharmaceutical industry, our research contributes directly to the safety and health potential of (novel) foods and pharmaceuticals. Our research outcomes are integrated in our teaching to scientists, clinicians, paramedics, and students. The health literacy regarding cancer prevention is still very limited, and our teaching and dissemination activities contribute to increasing this among health professionals, students, and eventually the general public.