



Białystok TM
Polish Longitudinal
University Study

Białystok PLUS study and Open Science

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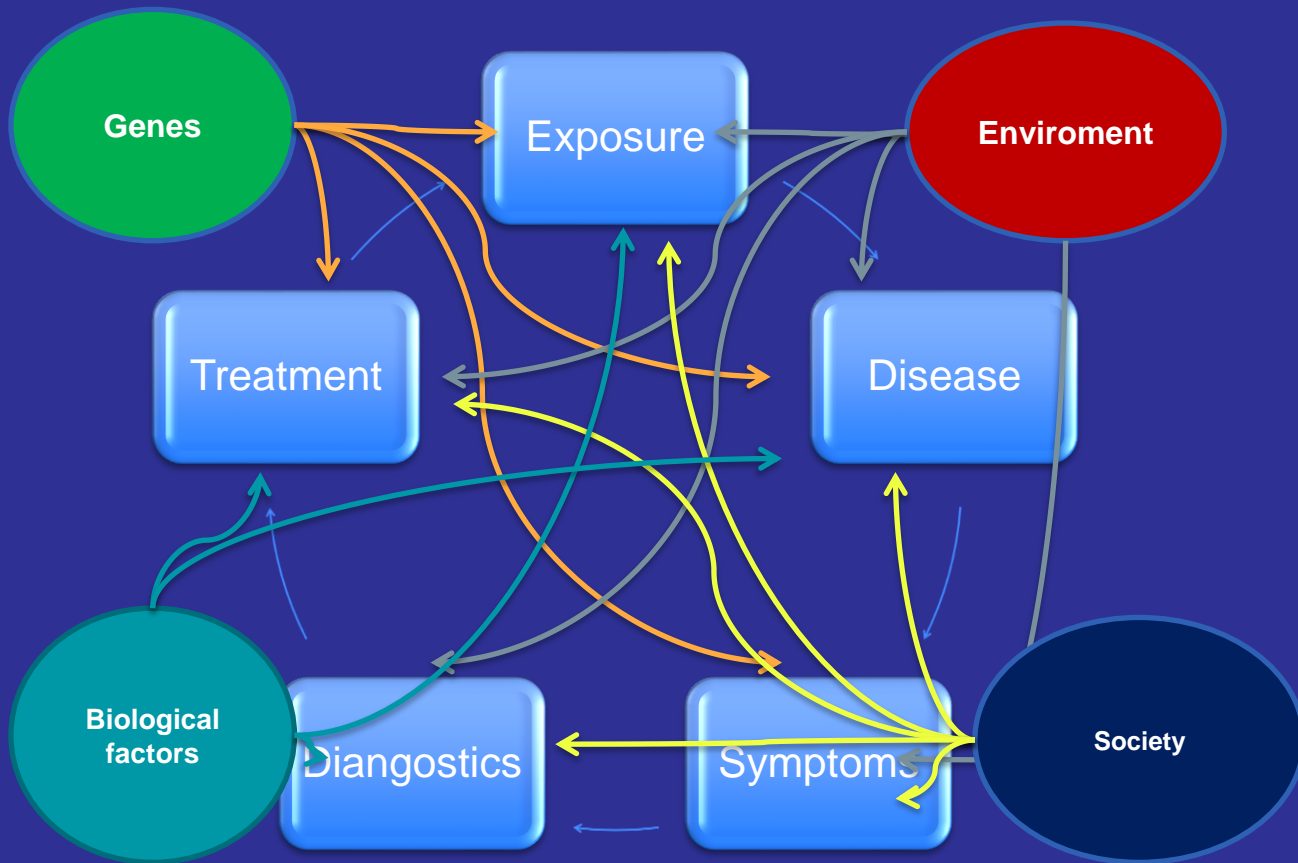
Białystok PLUS CMI

- **Polish**
- **Longitudinal**
- **University**
- **Study**

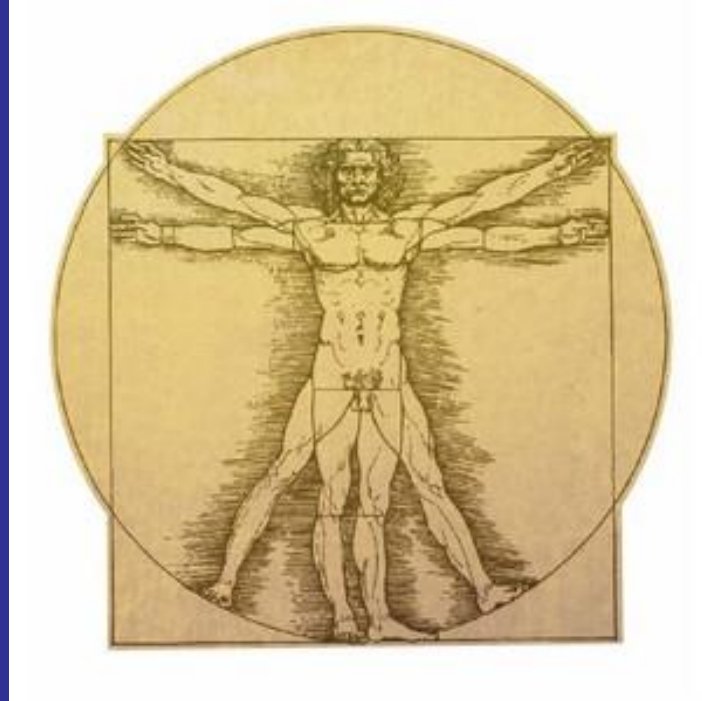
- **Complex**
- **Multimorbidity**
- **Investigations**

Białystok 

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Organs or organisms ?



Hypotheses

1. Factors affecting the development of lifestyle diseases are not fully elucidated.
2. Interactions between diseases of different organs and systems have not been sufficiently studied and may be a potential source of patient's care improvement.
3. Lifestyle and environmental factors affect the development of civilization diseases and may be amenable to interventions on population level.

Methodology

The methodology is coordinated with other population studies to allow maximal compatibility and comparability of data

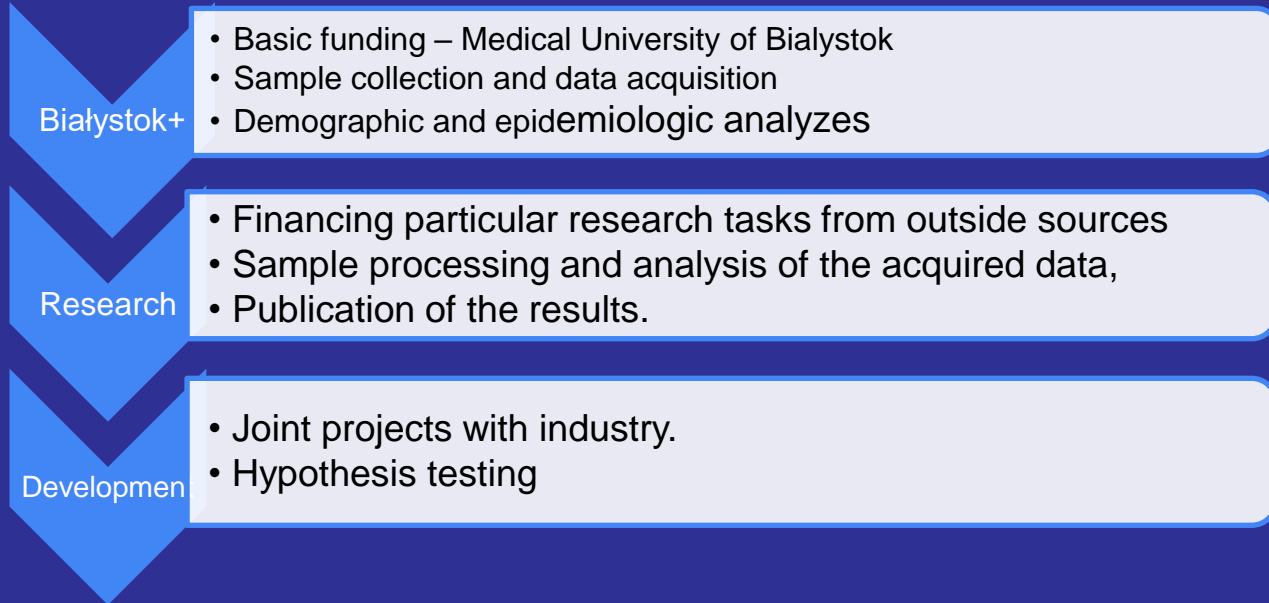
Partners and tutors

- SHIP Trend – Greifswald
- SHIP Pomerode – Brazylia
- Nationale Kohorte - Niemcy

Study design

1. Participants have been randomly chosen from age and gender based categories to represent the 20-80yo population of Białystok.
2. The individual data were obtained from the registry of Białystok inhabitants (Mayor's Office).
3. Invitation has been sent to 8320 inhabitants of Białystok, we expect enrollment of 3500 participants.
4. The initial evaluation lasted 6 years.
5. Examination will be repeated every 6 years.

Funding pattern



Assessments in Bialystok PLUS

1. Medical history

- Complaints
- Family history
- Disease and medications history and
- **3-day food intake, food frequency questionnaire**
- Occupation
- **Enviromental stressors (noise, pollution)**
- Pregnancies, deliveries and complications
- **Physical activity (IPAQ)**
- Depression scale (Beck, HADS), anxiety, quality of life
- Cognition (Montreal), Mini Mental state

Assessments in Bialystok PLUS

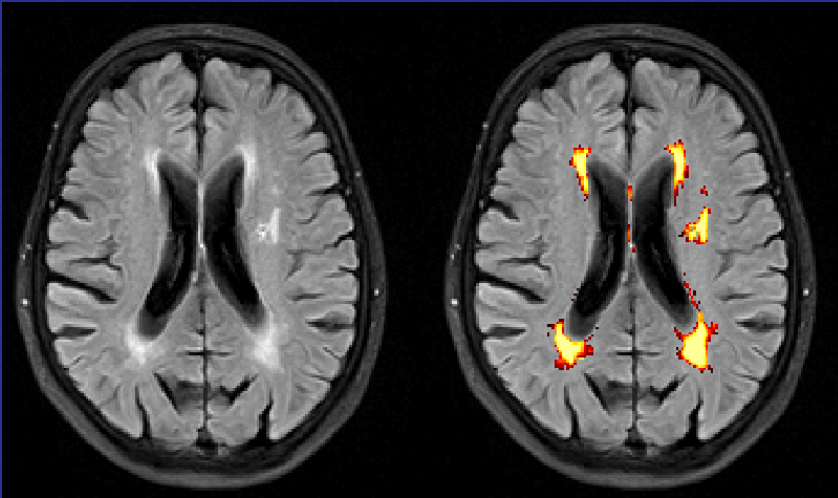
2. Anthropometric and oedema measurements
3. Bioimpedance – InBody device
4. Densytometry (Dexa)
5. Blood sampling (regular biochemistry, morphology, additional investigation in particular projects)
6. PBMC (Mononuclear Cells) isolation and deep freezing for future ex vivo analyses.
7. Urine sampling
8. Microbiome banking (oral, fecal)
9. OGTT
10. Oral cavity assessment – state of teeth and mucosal tissues. Saliva and periodontal fluid sampling.

Assessments in Bialystok PLUS

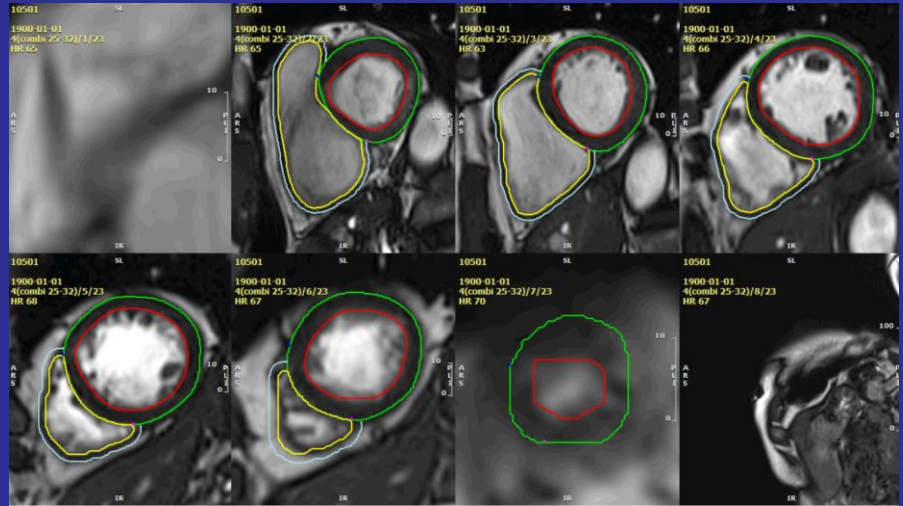
11. EKG
12. Cardiac USG – ECHO (Vivid 9)
13. Thyroid USG
14. Carotid USG, abdominal aorta USG
15. Liver and gall bladder USG
16. Bodypletyzmography with FeNO assessment
17. Spiroergometry
18. Funduscopy
20. Handgrip strength
21. Geriatrics : Up and go test, clock drawing ,
22. Voice recording
23. Whole body MRI without contrast in limited number of participants

MRI

CNS Automated segmentation Analysis



Automated Cardiac Function



Available data in sub-groups (temporarily)

- **Illumina' s infinium global screening array v3.0 -SNPs**
- **OLINK proteomic panels (96 cytokines each)**
 - **Inflammation**
 - **Immune Response**
 - **Cardiometabolic**
 - **CVD III**
 - **Metabolism**
- **OLINK proteomics from 120' OGTT samples**
- **Metabolome (Biocrates p180 or p500)**
- **Fecal microbiome based on 16S sequencing**

International cooperation

TRANSLATIONAL RESEARCH

The Journal of Laboratory and Clinical Medicine

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Journal of Affective Disorders 299 (2022) 367–376

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad



FULL LENGTH

Novel adipose tissue based

Mariana F. Sebastian

Published



Short communication

Physical and mental functioning during COVID-19 (COH-FIT-C&A)

Marco Solmi^{1,2,3,4,5}, Andrija Radua^{4,9,10}, Sara Davy Vancampfort¹⁵, Lau Elena Akimova¹⁷, Andres Philippe Conus²¹, Kim Q. Paolo Fusar-Poli^{4,24,25}, Pi Elisabetta Scanferla²⁶, Tai Karolina Skonieczna-Zydek³⁶, Leonardo Zocante³⁶, Mai

European Heart Journal

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<https://doi.org/10.1007/s00784-023-05442-z>

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Journal of Proteome Research

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Validation cohorts

The Rotterdam study

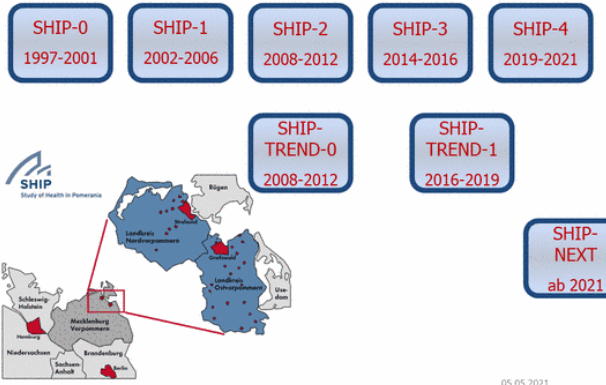


Erasmus MC
Erasmus

- Since 1990 people of 55 years or older were invited to participate

RS I: 7983 participants

- In 2000 second cohort added

RS II: 3011 additional participants



SHIP-0 1997-2001

SHIP-1 2002-2006

SHIP-2 2008-2012

SHIP-3 2014-2016

SHIP-4 2019-2021

SHIP-TREND-0 2008-2012

SHIP-TREND-1 2016-2019

SHIP-NEXT ab 2021

SHIP
Study of Health in Pomerania

Map labels: Rügen, Landkreis Vorpommern, Ostvorpommern, Landkreis Vorpommern-Greifswald, Uckermark, Mecklenburg-Vorpommern, Schleswig-Holstein, Hamburg, Mecklenburg-Vorpommern, Brandenburg, Niedersachsen, Sachsen-Anhalt, Mecklenburg-Vorpommern, Uckermark

05.05.2021

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Lectures online conference.bialystok.plus

BIAŁYSTOK+

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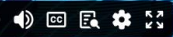
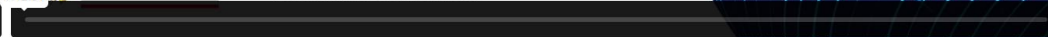
Towards Comprehensive Population Studies II

Białystok PLUS 2023



Ministerstwo
Edukacji i Nauki

Projekt finansowany ze środków budżetu państwa,
przyznanych przez Ministerstwo Edukacji i Nauki
w ramach Programu "Doskonała Nauka II".



Planned changes in the protocol for follow-up

- Changes in the medical history
 - Usage of electronic medical records
- Additional investigations:
 - Activity and physical capacity (actigraph, EMG, exercise cardiac output),
 - Standardized meal and continuous glucose monitoring.
 - Ophthalmic examination (OCT),
 - Sleep apnoea examination,
 - Additional projections in MRI focused on brain physiology and potential neoplastic changes.
- Evaluation of the use of new technologies in administration and health care
- Health literacy and susceptibility to fake news, attitude to vaccination
 - Started 29th Nov 2024

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BIAŁYSTOK PLUS COHORT STUDY
BASELINE
11.2018 - 31.12.2024
N>3000
AGE: 20-80 yrs
TYPE: URBAN POPULATION



2018-2024



2024-2029



2029-2034



Arm 2



CHILDREN OF
COHORT
PARTICIPANTS

**BIAŁYSTOK PLUS COHORT STUDY
OFFSPRINGS STUDY**
11.2024-02.2034
N-600
1 TIME MEASUREMENT
INCLUSION CRITERIA: AGE: 10-16 yrs
TYPE: URBAN CHILDREN AND ADOLESCENTS POPULATION

Arm 2 will include children of participants in the main cohort who will meet the age criterion of 10-16 years at any time during the tasks of Arm 1. A single measurement was assumed. The research hypothesis is the potential relationship between a parent's multimorbidity diagnosis, lifestyle, and the development of multimorbidity risk factors in their child (mainly from the perspective of lifestyle-related parameters, but also objective measurements indicating pre-diabetes, obesity, hypercholesterolemia, hypertension). In view of this, it is assumed that in this population, the exposure factor (exposed) is the presence of multimorbidity in the parent.

Arm 1

prospective
study



**BIAŁYSTOK PLUS COHORT STUDY
1st FOLLOW-UP**
11.2024-07.2029
N-3000
TYPE: URBAN POPULATION

prospective
study



**BIAŁYSTOK PLUS COHORT STUDY
2nd FOLLOW-UP**
04.2029-02.2034
N-2000
TYPE: URBAN POPULATION

Arm 1 includes an adult population, which is divided into exposed (with diagnosed multimorbidity at the start of 1st follow-up) and agent-free. This population is evaluated prospectively, with 5-year follow-ups, resulting in a total of 15 years of study duration at the end of the project with the baseline Białystok PLUS (3 times contact with the participant, so 10 full years of the subject's life). The objectives of the study are to assess the incidence, prevalence and quality of life changes associated with multimorbidity, using artificial intelligence algorithms to look for predictors of multimorbidity, as well as exploratory variables typology of subjects. Measures of epidemiological associations will be an important part of the study. A mid-term analysis has been planned in this arm to verify the hypotheses, update the study protocol in the tools and methods section, and assess the sense of continuing the project.

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Bialystok 

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BIALYSTOK PLUS – Poland's
largest long-term study of the
health status of the urban
population



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