

# The Vienna Prevention Project ViPP

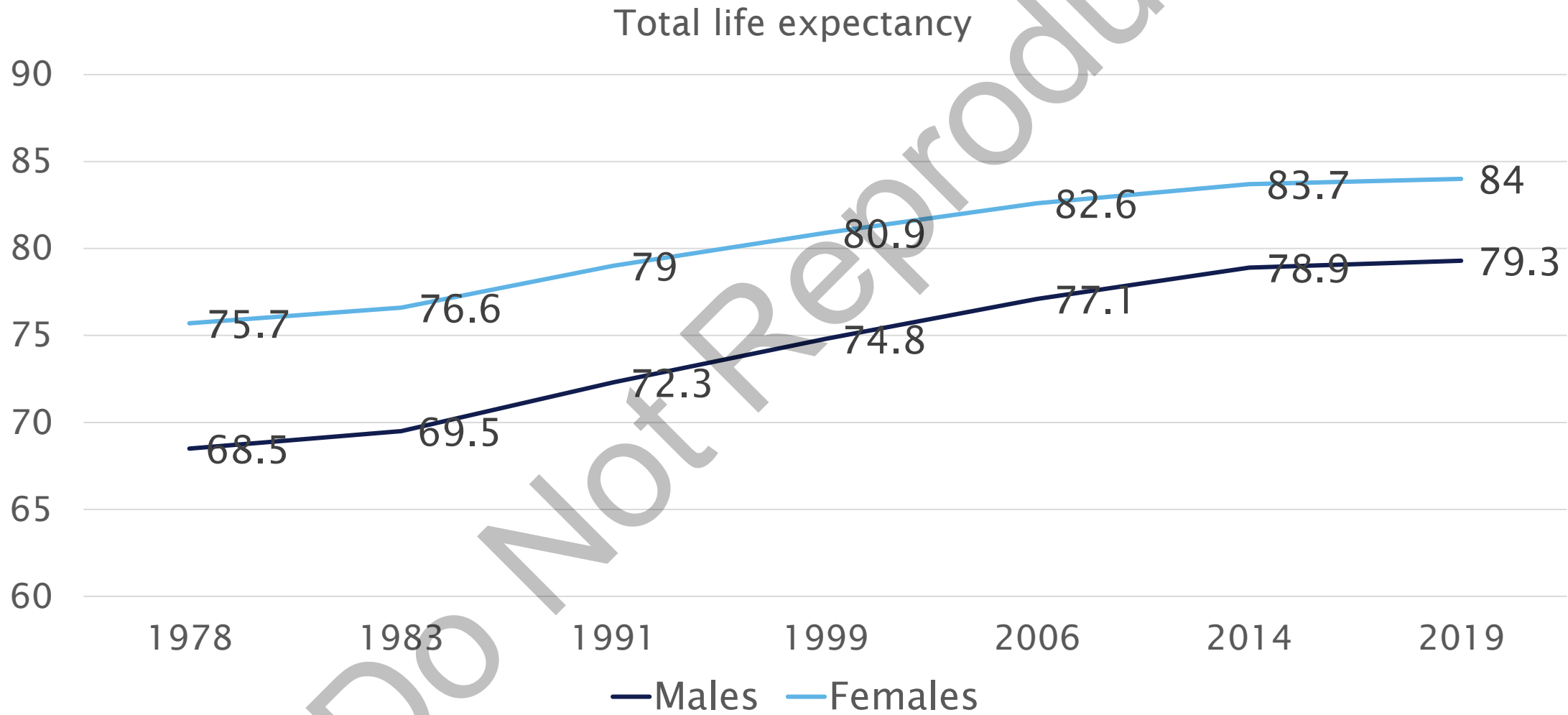
Priv.-Doz. Mag. DDr. Helmuth Haslacher, BSc BA  
Department of Laboratory Medicine

# Disclaimer

- Helmuth Haslacher
  - Molecular Biology, MD (Laboratory Medicine), Political Science
  - Venia docendi Med. & Chem. Lab. Diagnostics
  - Head of Preanalytics and Biobank, Head of Hematological Diagnostics @ Dept. of Lab. Med, MedUni Wien
  - Biobank Coordinator liquid Samples, WP-Leader QM Austrian Biobank consortium [BBMRI.at](http://BBMRI.at)
  - No conflicts of interest



# Life expectancy – Health adjusted life years



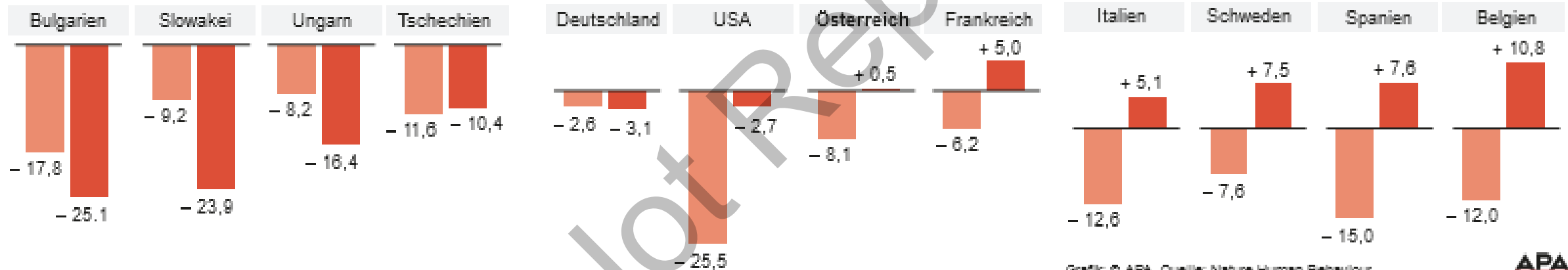
<https://www.statistik.at/en/statistics/population-and-society/health/health-status/healthy-life-expectancy>

# Life expectancy – Health adjusted life years

## Covid drückte die Lebenserwartung

Veränderung der Lebenserwartung in Monaten

2019 – 2020 2020 – 2021



Grafik: © APA, Quelle: Nature Human Behaviour



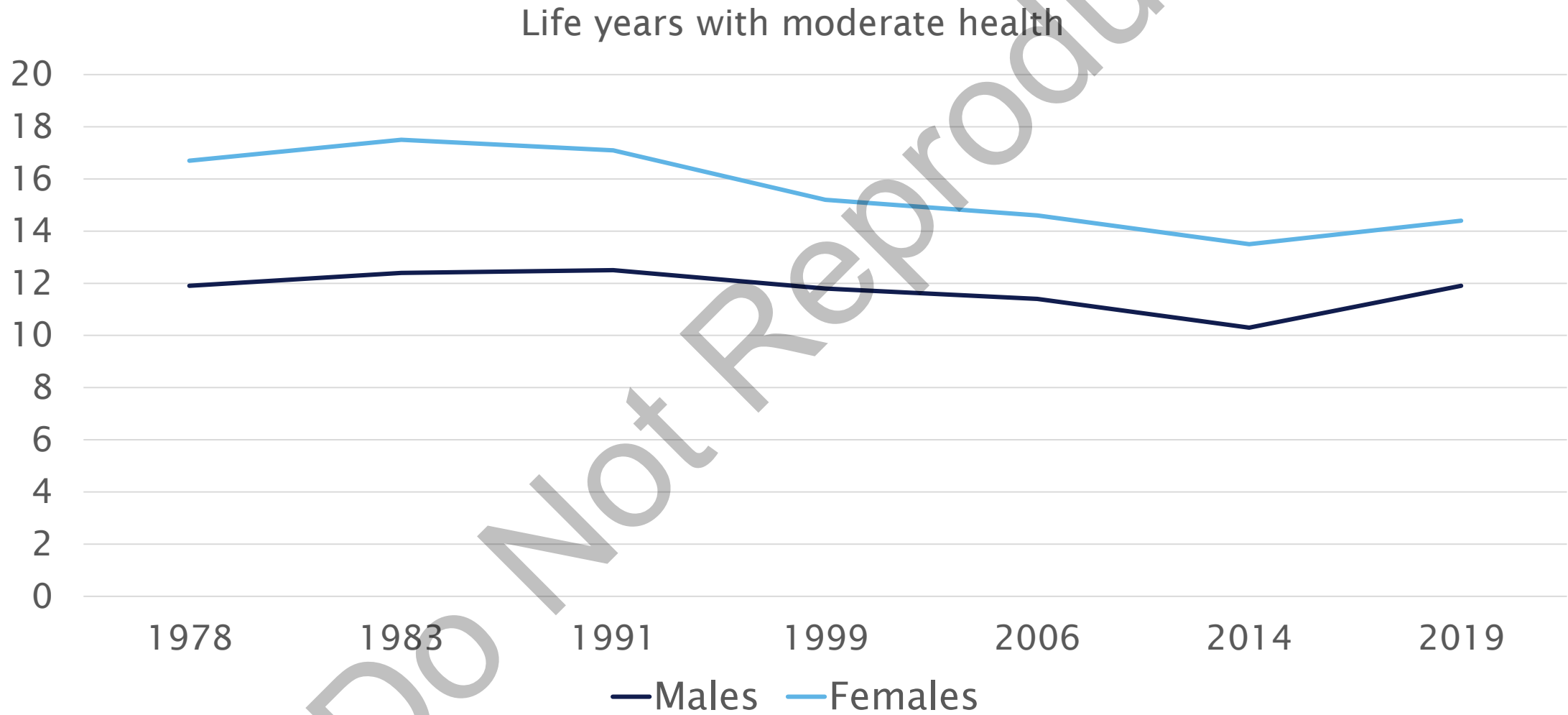
<https://science.orf.at/stories/3215614/>

# Life expectancy – Health adjusted life years



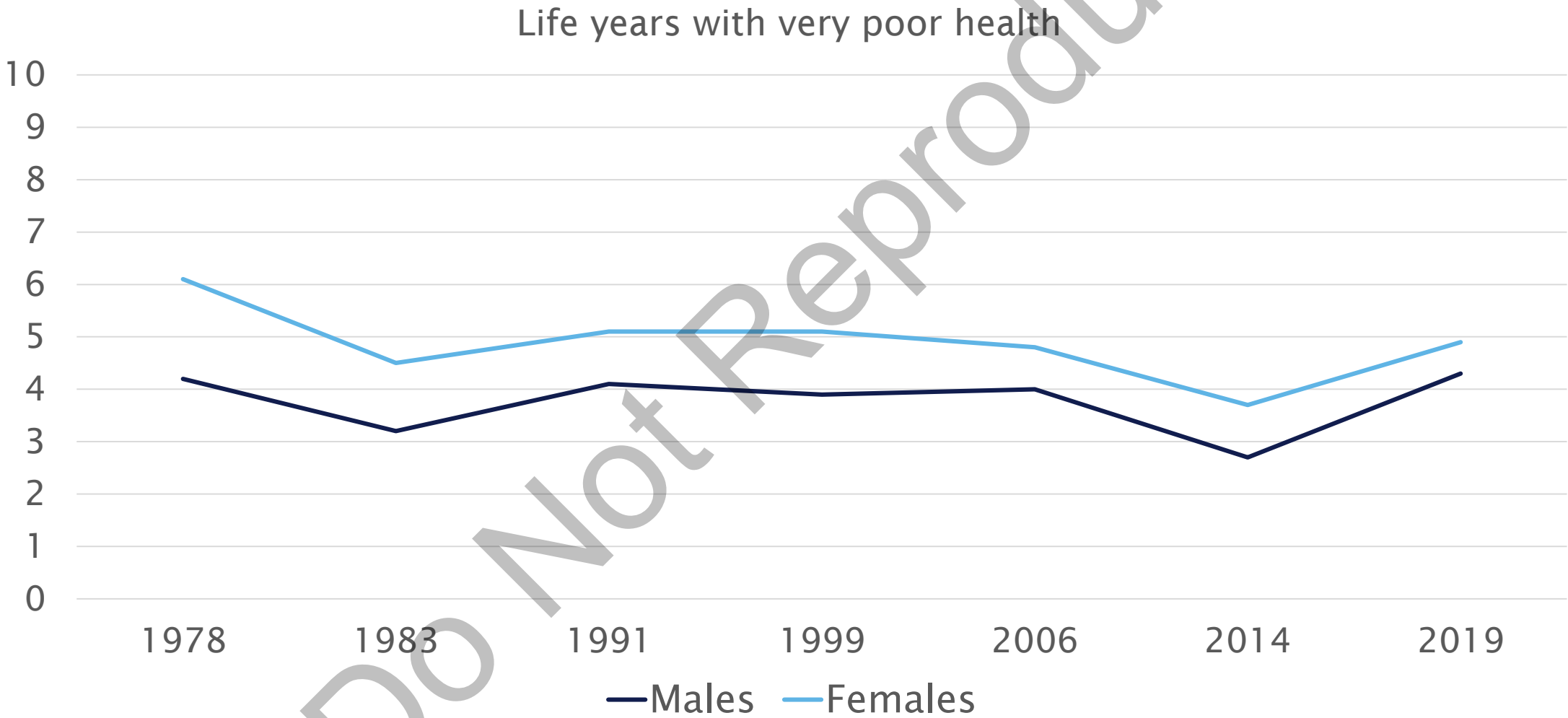
<https://www.statistik.at/en/statistics/population-and-society/health/health-status/healthy-life-expectancy>

# Life expectancy – Health adjusted life years



<https://www.statistik.at/en/statistics/population-and-society/health/health-status/healthy-life-expectancy>

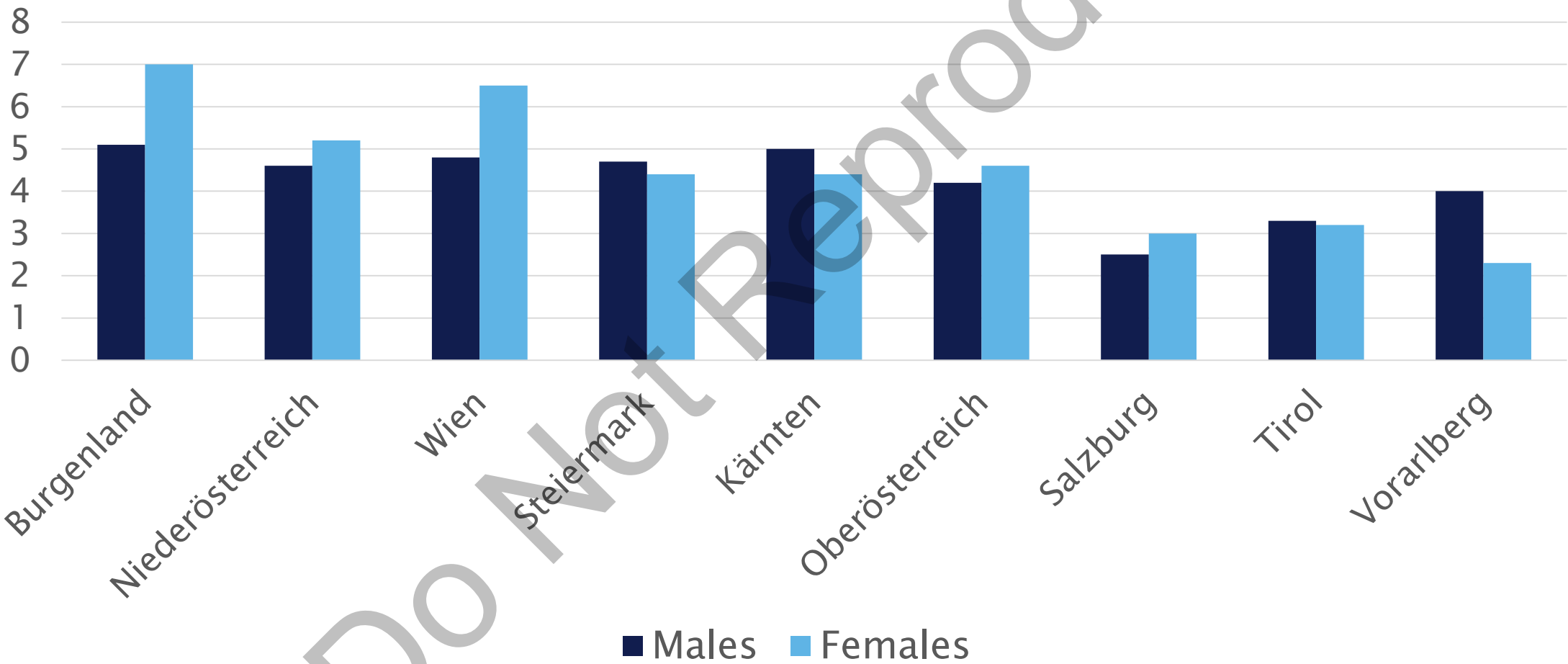
# Life expectancy – Health adjusted life years



<https://www.statistik.at/en/statistics/population-and-society/health/health-status/healthy-life-expectancy>

# Life expectancy – Health adjusted life years

Life years with very poor health



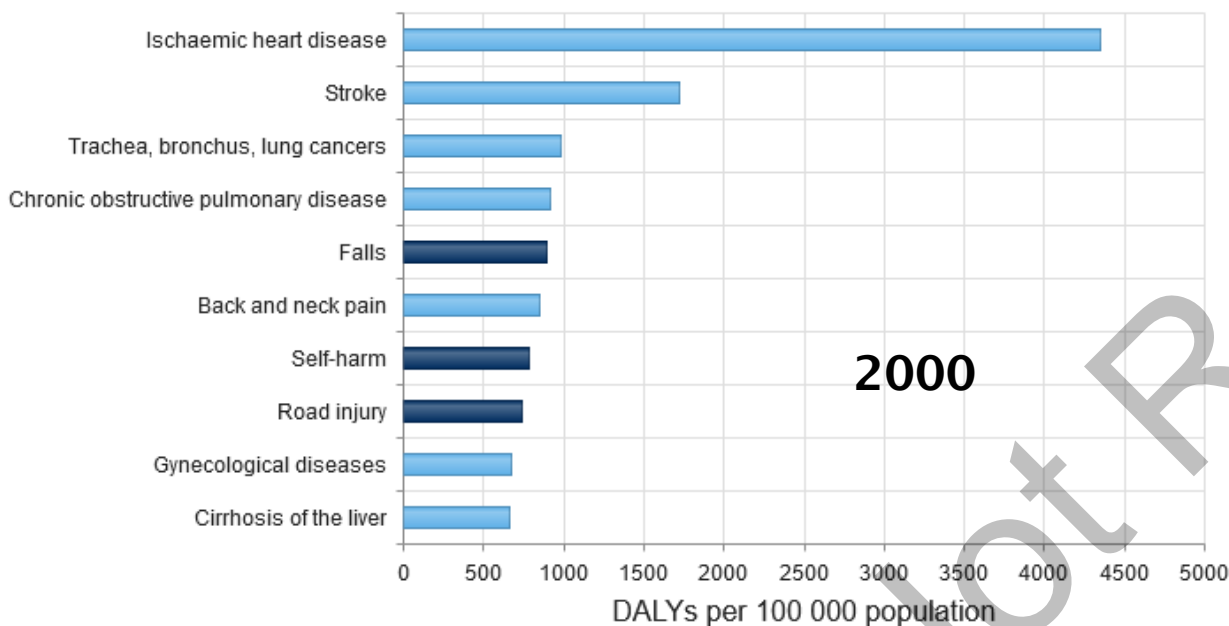
<https://www.statistik.at/en/statistics/population-and-society/health/health-status/healthy-life-expectancy>



# Life expectancy – Health adjusted life years

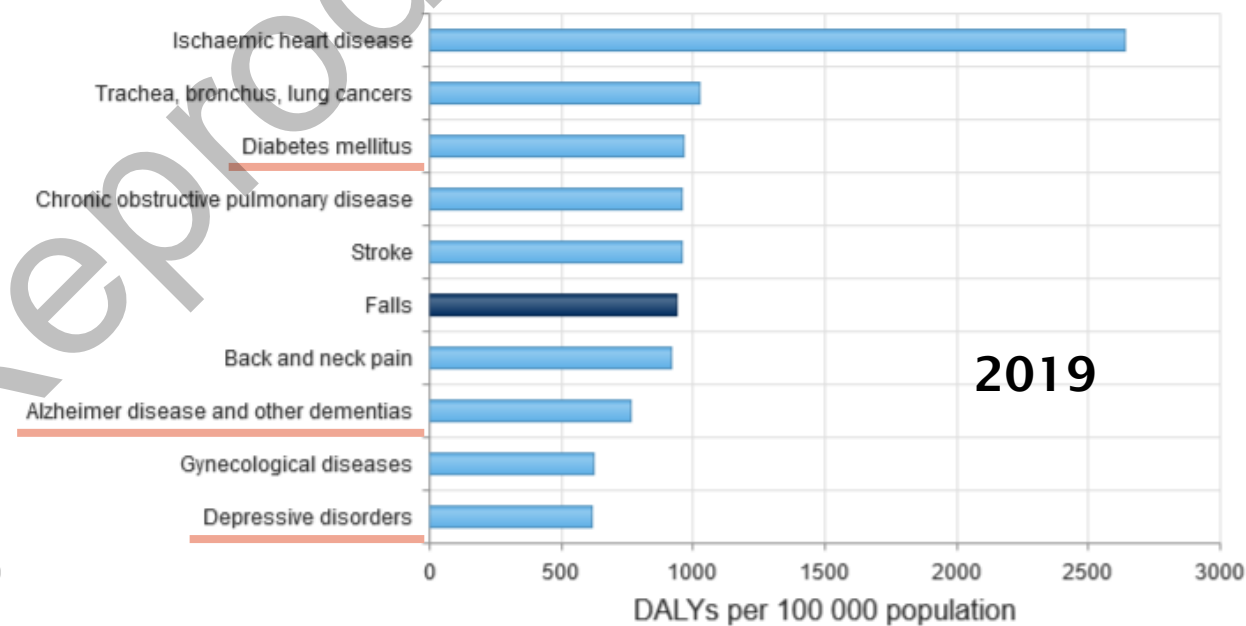
## Top 10 causes of DALY in Austria for both sexes aged all ages

Top 10 causes of DALY



2000

Top 10 causes of DALY



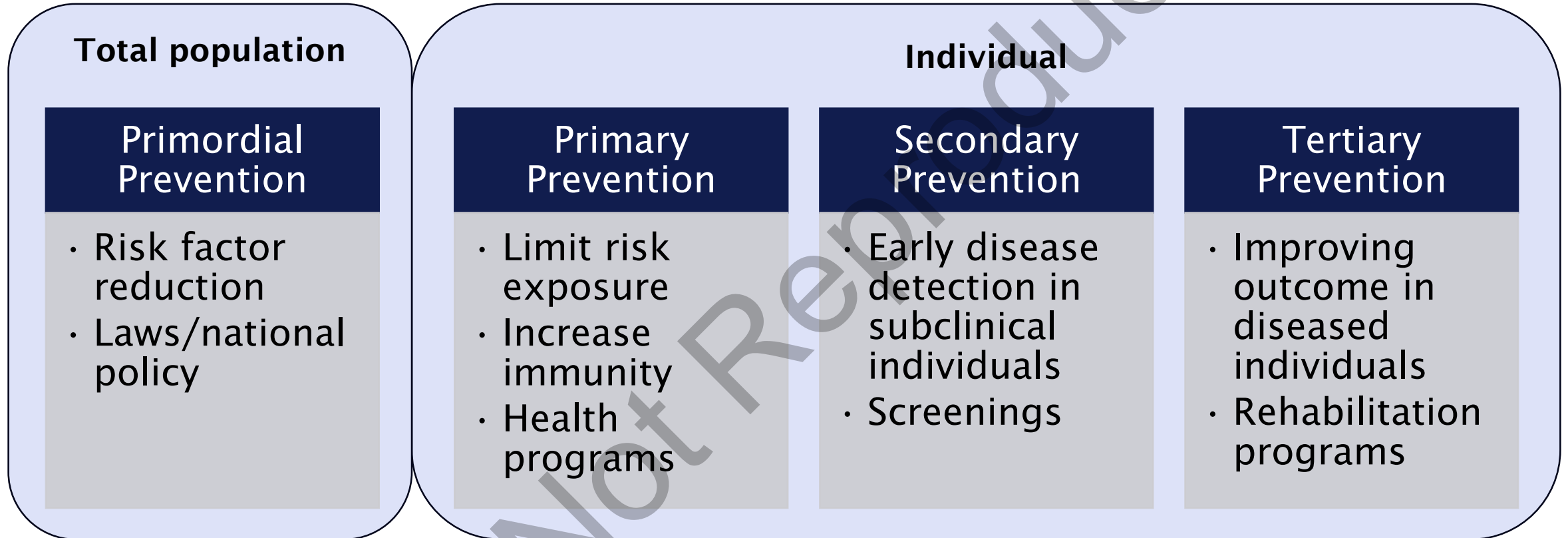
2019

■ Communicable, maternal, perinatal and nutritional conditions  
■ Non-communicable diseases  
■ Injuries

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■ Non-communicable diseases  
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<https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/global-health-estimates-leading-causes-of-dalys>

# Prevention



HEALTHY

DISEASED

<https://www.ncbi.nlm.nih.gov/books/NBK537222/>

# Prevention

May 1, 2023

## Cost-effectiveness and Return on Investment of a Nationwide Case-Finding Program for Familial Hypercholesterolemia in Children in the Netherlands

Zanfina Ademi, PhD<sup>1,2</sup>; Richard Norman, PhD<sup>3</sup>; Jing Pang, PhD<sup>4</sup>; et al

> Author Affiliations

JAMA Pediatr. 2023;177(6):625-632. doi:10.1001/jamapediatrics.2023.0763

**Results** In this model constructed to simulate the progression of FH in 1000 hypothetical 10-year-olds, from a health care perspective, the program would gain 2.53 QALYs per person, at an additional cost of €23 365 (\$25 468) (both discounted). These equated to an ICER of €9220 (\$10 050) per QALY gained. From the societal perspective, the detection and treatment program were cost saving over a lifetime compared with no cascade screening for FH. The ROI for the detection and treatment program for FH in children was €8.37 (\$9.12).

**Conclusions and Relevance** The findings of this study suggest that the early detection and treatment program for FH in children may offer a good value for investment, being both health and cost saving. The findings and interpretations are conditional on assumptions inherent in the health economic model.

## Cost effectiveness of population screening vs. no screening for cardiovascular disease: the Danish Cardiovascular Screening trial (DANCAVAS)

Rikke Søgaard<sup>1\*</sup>, Axel Cosmus Pyndt Diederichsen<sup>2</sup>, Lars M. Rasmussen<sup>3</sup>, Jess Lambrechtsen<sup>4</sup>, Flemming H. Steffensen<sup>5</sup>, Lars Frost<sup>6</sup>, Kenneth Egstrup<sup>4</sup>, Grazina Urbonaviciene<sup>6</sup>, Martin Busk<sup>5</sup>, and Jes S. Lindholt<sup>7</sup>

### Key Question

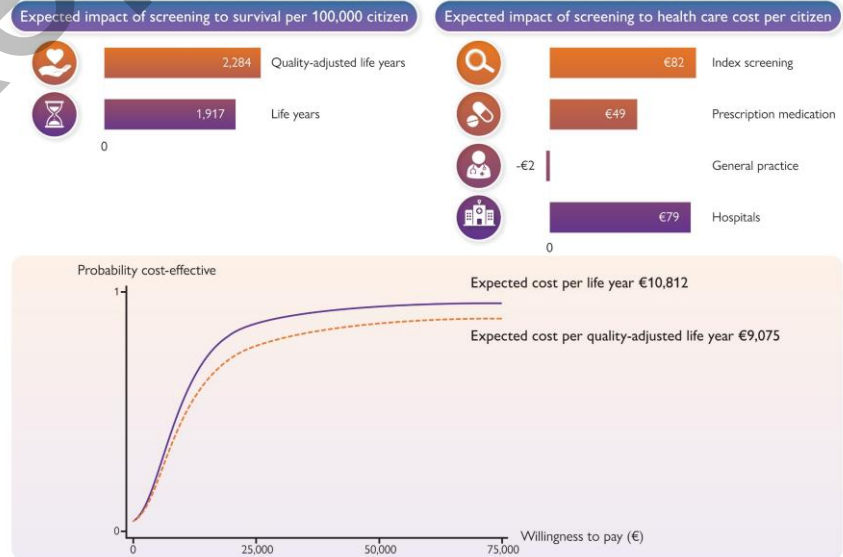
Is comprehensive screening for seven cardiovascular conditions in the general population cost effective from the perspective of European healthcare systems?

### Key Finding

Screening for cardiovascular disease was associated with average life year and quality-adjusted life year gains, which was achieved for an average health care cost of €207 per invitee.

### Take Home Message

Screening for cardiovascular disease is a promising path for continuation of the past decades' success in reducing cardiovascular morbidity and mortality. Results are competitive to, e.g., already implemented cancer screening programmes.



# Prevention

European Journal of Cancer 135 (2020) 121–129

## Cost-effectiveness of lung cancer screening with low-dose computed tomography in heavy smokers: a microsimulation modelling study

Yihui Du <sup>a</sup>, Grigory Sidorenkov <sup>a</sup>, Marjolein A. Heuvelmans <sup>a</sup>, Harry J.M. Groen <sup>b</sup>, Karin M. Vermeulen <sup>a</sup>, Marcel J.W. Greuter <sup>c</sup>, Geertruida H. de Bock <sup>a,\*</sup>

- Lung cancer screening with low-dose computed tomography in a high-risk population is cost-effective.
- The optimal strategy for men is annual screening from the age of 55 to 80 years, with a cost of 27.6 k€/LYG.
- The optimal strategy for women is biennial screening from the age of 50 to 80 years, with a cost of 21.1 k€/LYG.

Cancer Causes & Control (2019) 30:819–826  
<https://doi.org/10.1007/s10552-019-01178-y>

### ORIGINAL PAPER

## Cost-effectiveness of breast cancer screening in the National Breast and Cervical Cancer Early Detection Program

Sun Hee Rim<sup>1</sup> · Benjamin T. Allaire<sup>2</sup> · Donatus U. Ekwueme<sup>1</sup> · Jacqueline W. Miller<sup>1</sup> · Sujha Subramanian<sup>2</sup> · Ingrid J. Hall<sup>1</sup> · Thomas J. Hoerger<sup>2</sup>

**Results** Compared with no program and no screening, the NBCCEDP lowers breast cancer mortality and improves QALYs, but raises health care costs. Base-case ICER for the program was \$51,754/QALY versus no program and \$50,223/QALY versus no screening. Probabilistic sensitivity analysis ICER for the program was \$56,615/QALY [95% CI \$24,069, \$134,230/QALY] versus no program and \$51,096/QALY gained [95% CI \$26,423, \$97,315/QALY] versus no screening.

**Conclusions** On average, breast cancer screening in the NBCCEDP was cost-effective compared with no program or no screening.

# Prevention

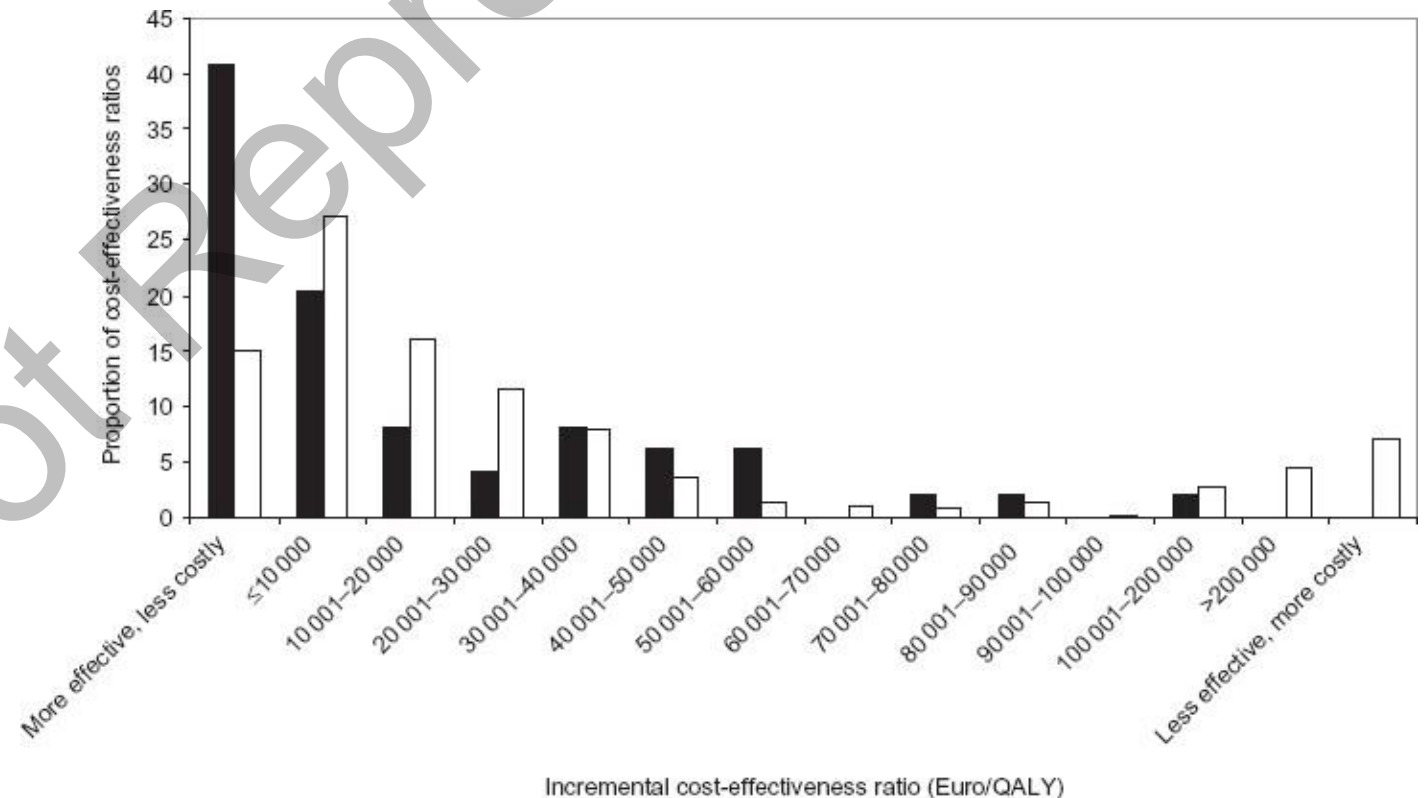
- Simoens, 2011
  - Preventive measures: €6255 per QALY
  - Curative interventions: €12917 per QALY

JPHSR 2011, 2: 151–155  
© 2011 The Author  
JPHSR © 2011 Royal  
Pharmaceutical Society  
Received December 17, 2010  
Accepted May 18, 2011  
DOI  
10.1111/j.1759-8893.2011.00052.x  
ISSN 1759-8885

## Public health and prevention in Europe: is it cost-effective?

Steven Simoens

Research Centre for Pharmaceutical Care and Pharmaco-economics, Katholieke Universiteit Leuven, Leuven, Belgium



# Aim

- **To assess the efficacy of a comprehensive secondary prevention program to increase quality adjusted life time**
- **To deeply phenotype and genotype the local population to better understand disease development**

# International cohort landscape



# Why another cohort?

- Time changes – long-term impact of a global pandemic
- Technology changes – advances in imaging, wearables, etc.; assessment of new clinical parameters (e.g., OCT)
- International standards for biomaterial processing



# ViPP – The Vienna Prevention Project

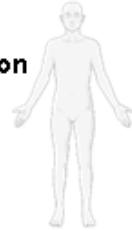
- Ward for secondary prevention
- Close monitoring of a representative sample to research a vigorous secondary prevention strategy
- Simultaneous development of a comprehensive resource (Vienna Prevention Biobank)



# ViPP – The Vienna Prevention Project

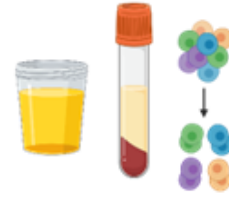
## Clinical examinations & Laboratory

::demographics  
::physical examination  
::lab medicine



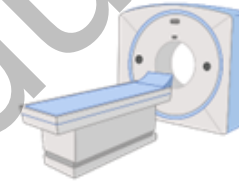
::audiometry  
::optometry  
::allergology  
::wearables

## Biobank



- Genome & Epigenome
- Transcriptome
- Immune cells
- Single cell analyses
- etc.

## Imaging



MRI  
PET-CT

## Special clinical examinations



cardial echo sonography (carotis, femoralis)  
Ankle-brachial-index ergometry



Fibroscan



pulmonary function



neuro-psychological testing



3D Skin Scan



OCT / OCT-A



oGTT



Kreatinin Clearance

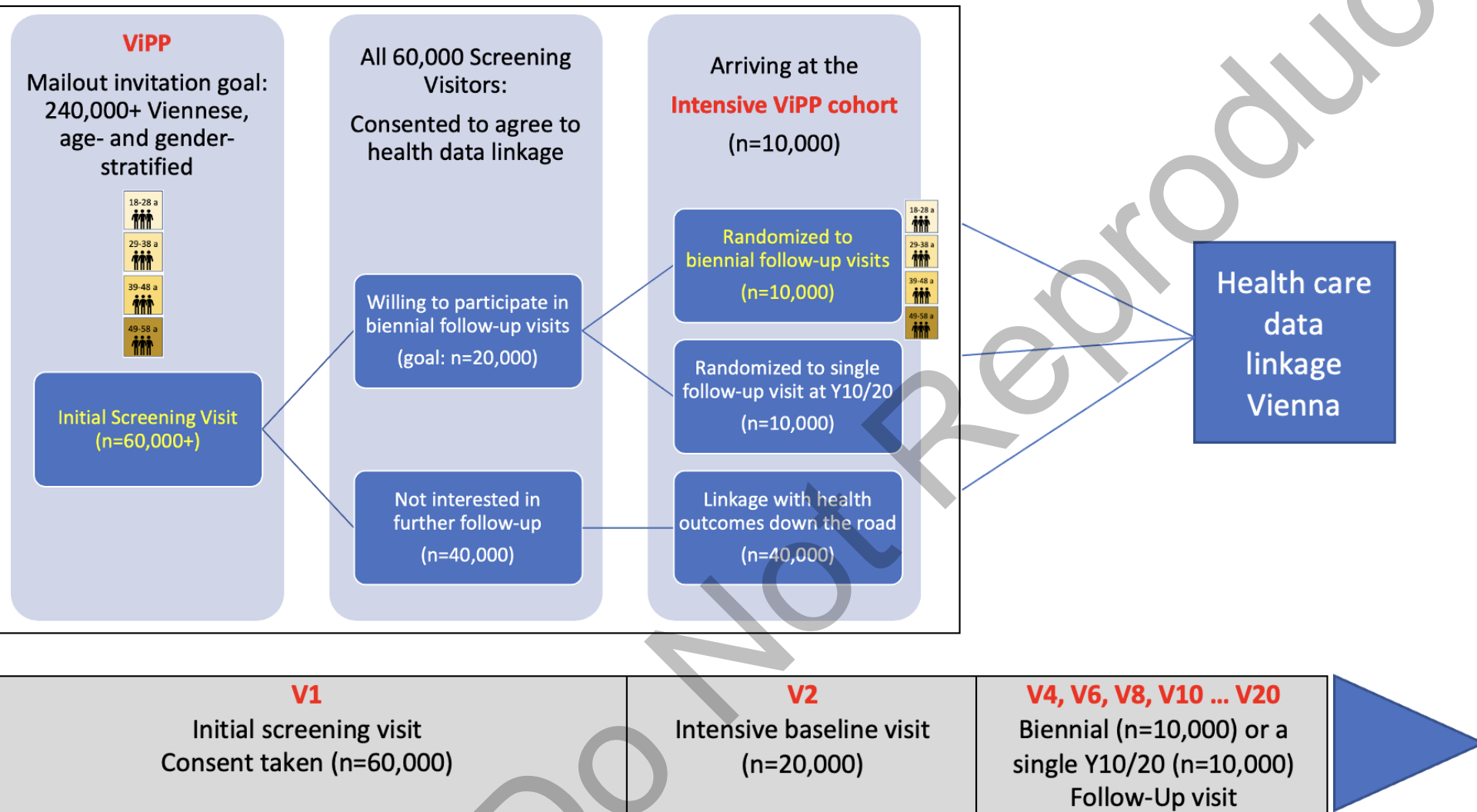


Gynecology



Urology

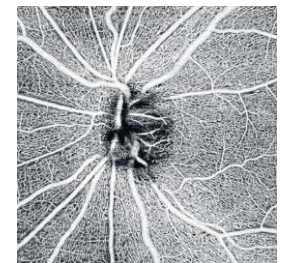
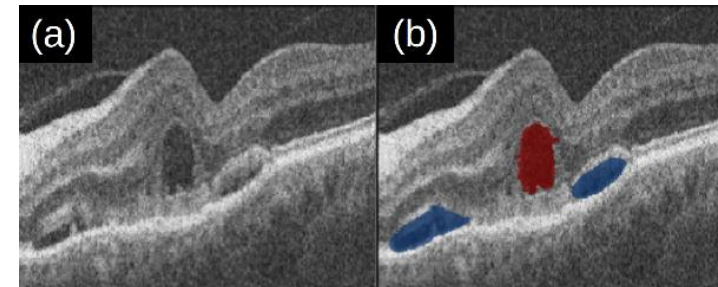
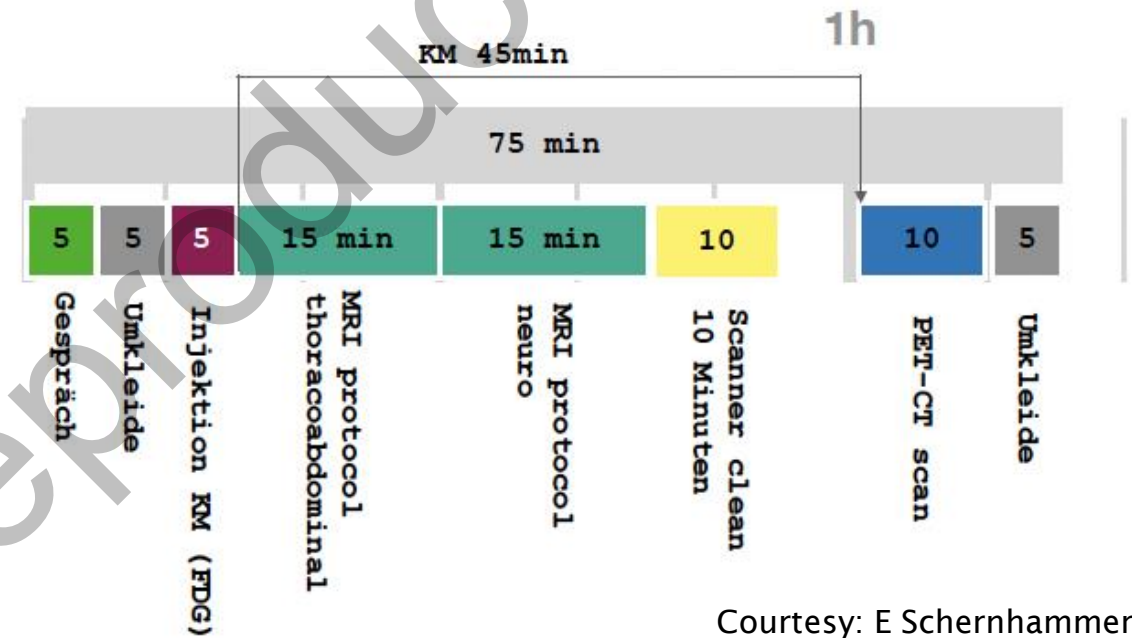
# ViPP – The Vienna Prevention Project



Courtesy: E Schernhammer

# ViPP – The Vienna Prevention Project

- Imaging:
  - Ultra low dose PET-CT
  - Thoracoabdominal MRT
  - Neuro-MRT
- OCT, OCT-A: early detection of
  - AMD
  - Diabetic retinopathy
  - Biomarker for atherosclerosis/CAD



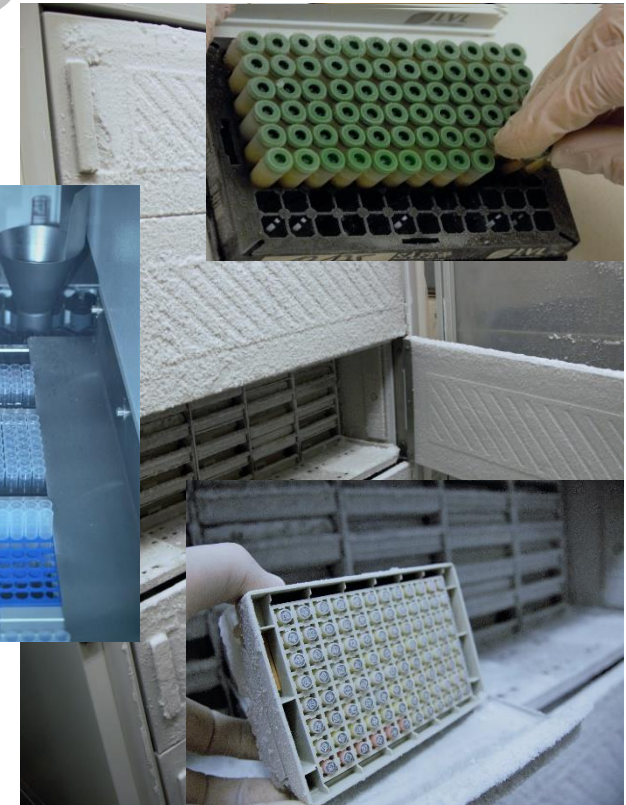
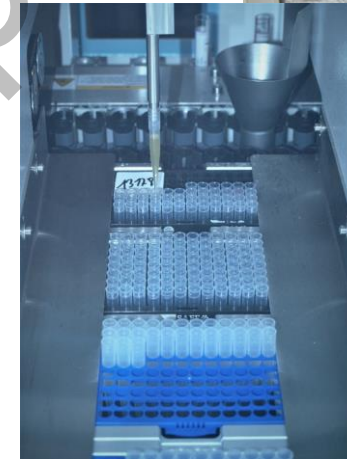
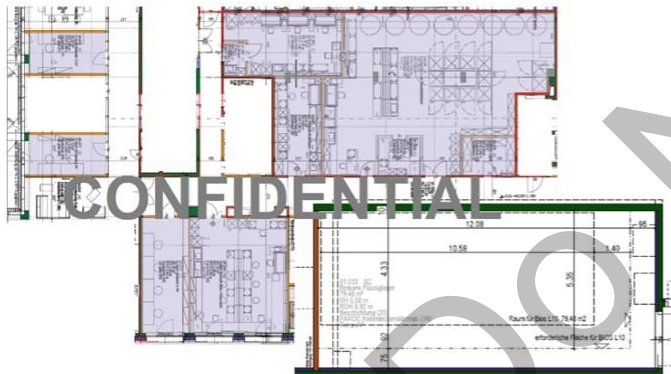
Schlegl et al., IPMI 2015

# ViPP – The Vienna Prevention Project



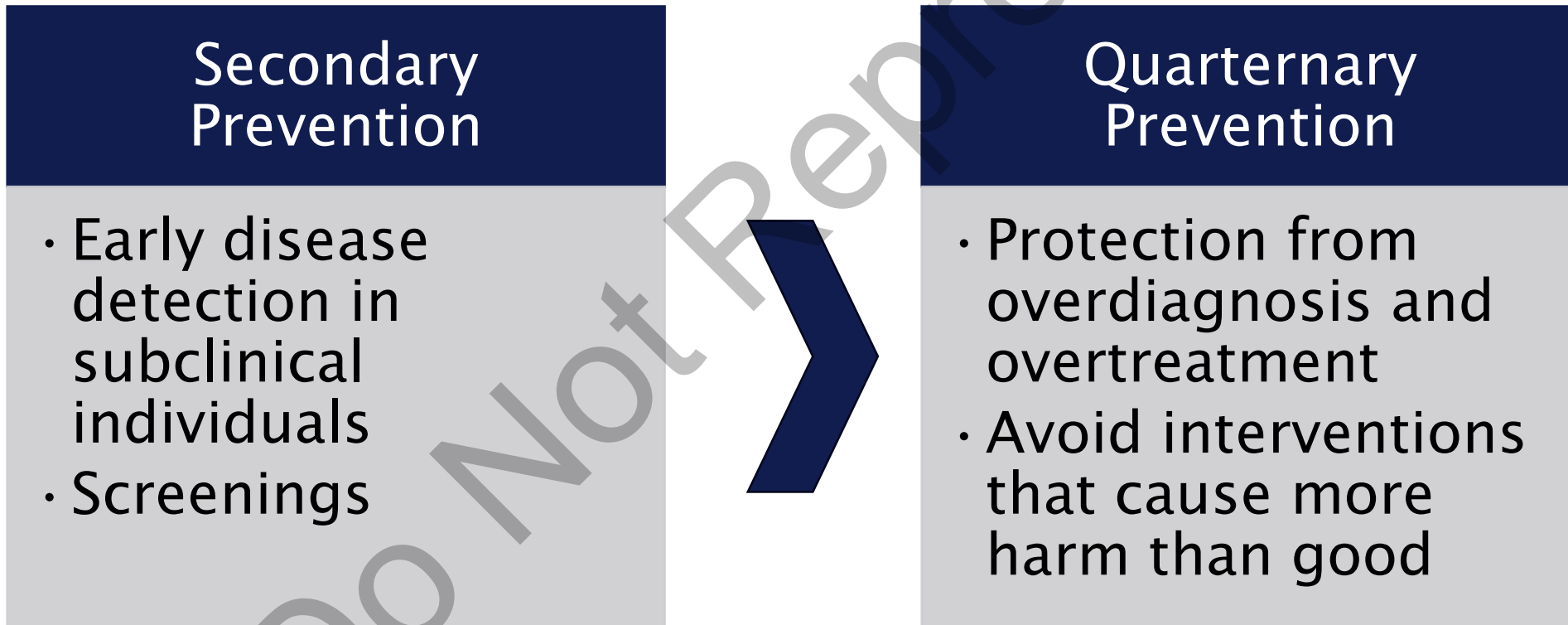
BIOBANK  
MEDIZINISCHE UNIVERSITÄT WIEN

- Establishing a comprehensive sample collection
- Processing and storage acc. to international standards
- Enables research into still unknown biomarkers



# Prevention

- Open questions/issues
  - „Tertiary prevention“ – how to deal with potential overtreatment?



<https://www.ncbi.nlm.nih.gov/books/NBK537222/>

# ViPP – The Vienna Prevention Project

- Open questions/issues
  - „Tertiary prevention“ – how to deal with potential overtreatment?
  - New methods, big data – how to deal with currently not meaningfully interpretable data
  - Medical duty of care
  - Informed consent – requirements and best practise might change over time
  - Time- and cost-intense examinations
  - Drop-out – incentives to adhere
  - Inclusion of health data – “digital avatars”

# ViPP – The Vienna Prevention Project

- ViPP as a basis for add-on projects
  - Birth cohort (offspring of study participants)
  - Elderly cohort (end of life) – to test hypothesis derived from ViPP
  - Digital control cohort (health data space)



# Conclusion

- Despite increasing life expectancy, the last five years are still in poor health
- In the past, secondary prevention projects have proven cost effective and increased QALY
- ViPP is a planned secondary prevention program for the early detection of various diseases that cause DALY
- In-depth clinical, imaging, neuropsychological, laboratory,... data and associated biomaterial
- Potential add-on projects (e.g., birth cohort)

# Thank you for your attention!

## ViPP planning team

- Christoph Binder
- Christoph Bock
- Helmuth Haslacher
- Georg Langs
- Markus Müller
- Manuel Mayr
- **Eva Schernhammer**
- Susanne Strohmaier
- Stefan Thurner
- Oswald Wagner
- Markus Zeitlinger
- Clinical researchers MUV