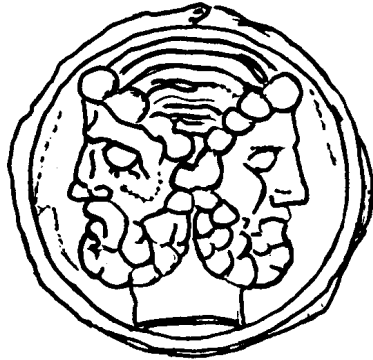




Cancer Registry of Norway

Institute of Population-based Cancer Research



Janus Serum Bank

- a Norwegian contribution to
aetiological cancer research

CCPRB, Malmö, 27 August 2006

Tom K Grimsrud, MD PhD



Janus coworkers and associates

- Randi E Gislefoss
- Adele Stornes
- Marianne Lauritzen
- Aage Andersen

- Jan Ivar Martinsen
- Svein Erling Tysvær
- Bjarte Aagnes



History

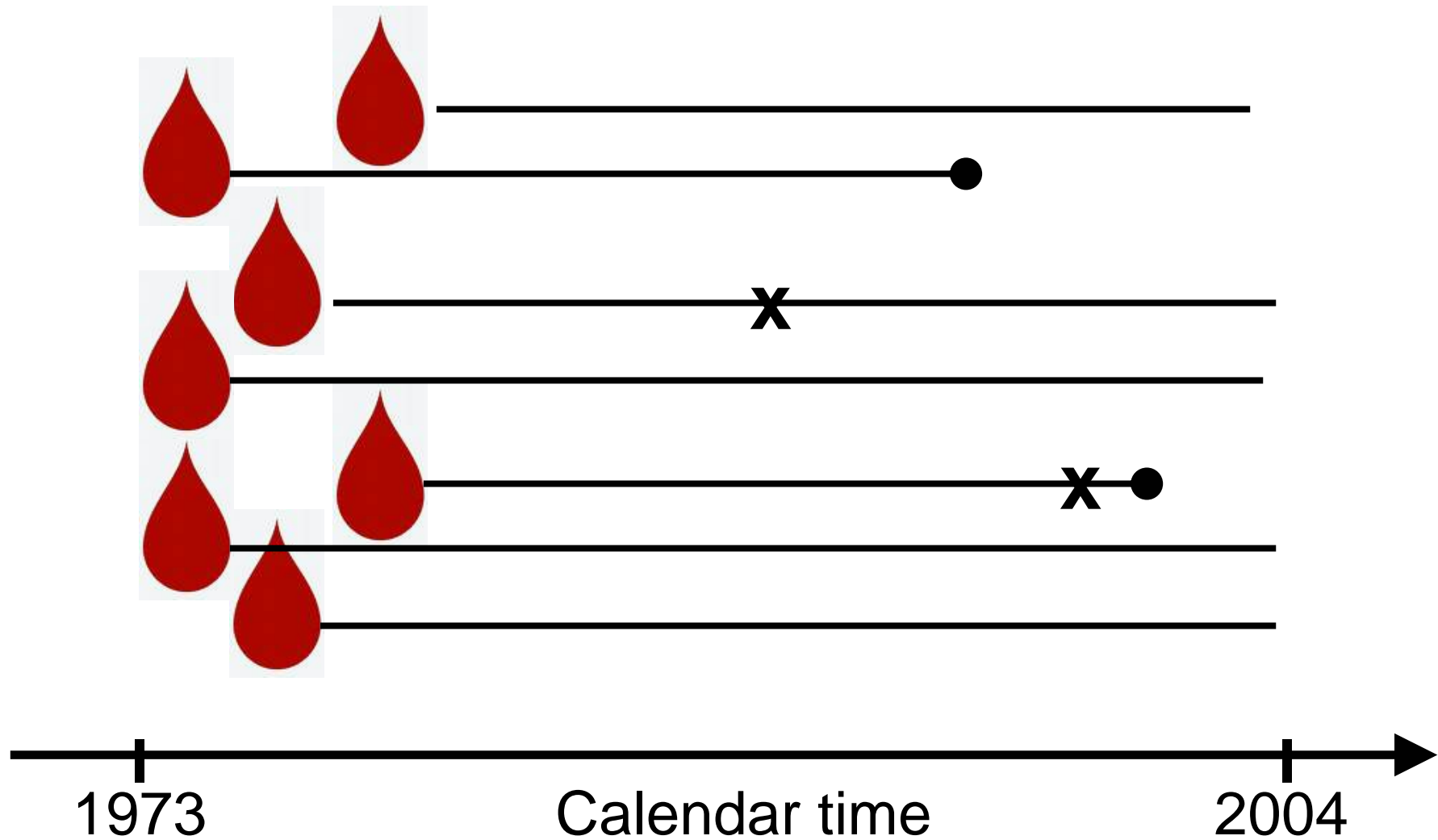
- 1970s:
 - Risk factors for and prevention of cardiovascular disease
 - Immunology
 - Large population health surveys
 - Smoking, blood pressure, cholesterol
- 1973 Janus Project:
 - Sponsored by the Norwegian Cancer Society



Roman bust of the god Janus, Vatican Museum



Basic idea: leftover serum





Janus Serum Bank

- Samples drawn 1973–1991 and 1998–2005
- 300,000 participants from population-based health surveys (Oslo and countrywide)
- Participation rate 60–88%
- Age around 40, some older, some younger
- 30,000 blood donors (Red Cross, Oslo)
- Slightly more men than women



Janus Serum Bank (cont.)

- Individual from health surveys:
 - 0.5–4 ml serum
- Some have two or more prediagnostic samples, a few even postdiagnostic samples
- Stored at -25°C
- Case–control studies or case–cohort studies
- Matching on sex, age, and time of sampling



Linkage and confounder control

- Unique personal identity numbers (based on 1960 census)
- Same identity numbers used for census, health surveys, and registration of cancer and death
- Data on life style from the health surveys
- Census data Statistics Norway may provide data on occupation, fertility, socio-economy
- Data from the Cancer Registry of Norway considered of high quality



Parameters analysed

- Tumour markers (CA125)
- Proteins (thyroglobulin, albumin)
- Vitamins
- Metals (selenium, copper)
- Dietary markers, fatty acids
- Serological markers (bacteria, viruses)
- Hormones
- Tobacco smoke markers
- Environmental pollutants



Genotyping

- Dependant on trace amounts of leucocytes
- Two studies:
 - Polymorphisms in folate and methyl group metabolism (Ulvik & al, 2004)
 - BRCA1 mutations (Ekstrøm & al, 2004)
- Polymerase chain reaction (PCR) techniques



Cooperative studies

- Multidisciplinary approach
- Universities and research groups
- International collaboration:
 - Nordic countries
 - EU
 - US NCI



Research results

- The first Janus study published in 1982 on lung cancer and biomarkers
- More than 50 published original articles, a dozen still under way



”Highlights”

- Human papillomavirus (HPV, different types) associated with epithelial cancers in the pelvic area and in the head and neck area
- *Helicobacter pylori* and gastric cancer
- Epstein-Barr virus and different forms of cancer
- *Chlamydia trachomatis* and gynecological ca.
- Organochlorines (in preparation)



”Highlights” (cont.)

- High-rated journals (no. of publications):
 - *New England Journal of Medicine* (3)
 - *British Medical Journal* (1)
 - *American Journal of Epidemiology* (1)
 - *Journal of American Medical Association* (1)
 - *Journal of the National Cancer Institutes* (1)
 - *British Journal of Cancer* (5)
 - *International Journal of Cancer* (9)
 - *Cancer Epidemiology Biomarkers & Prevention* (7)

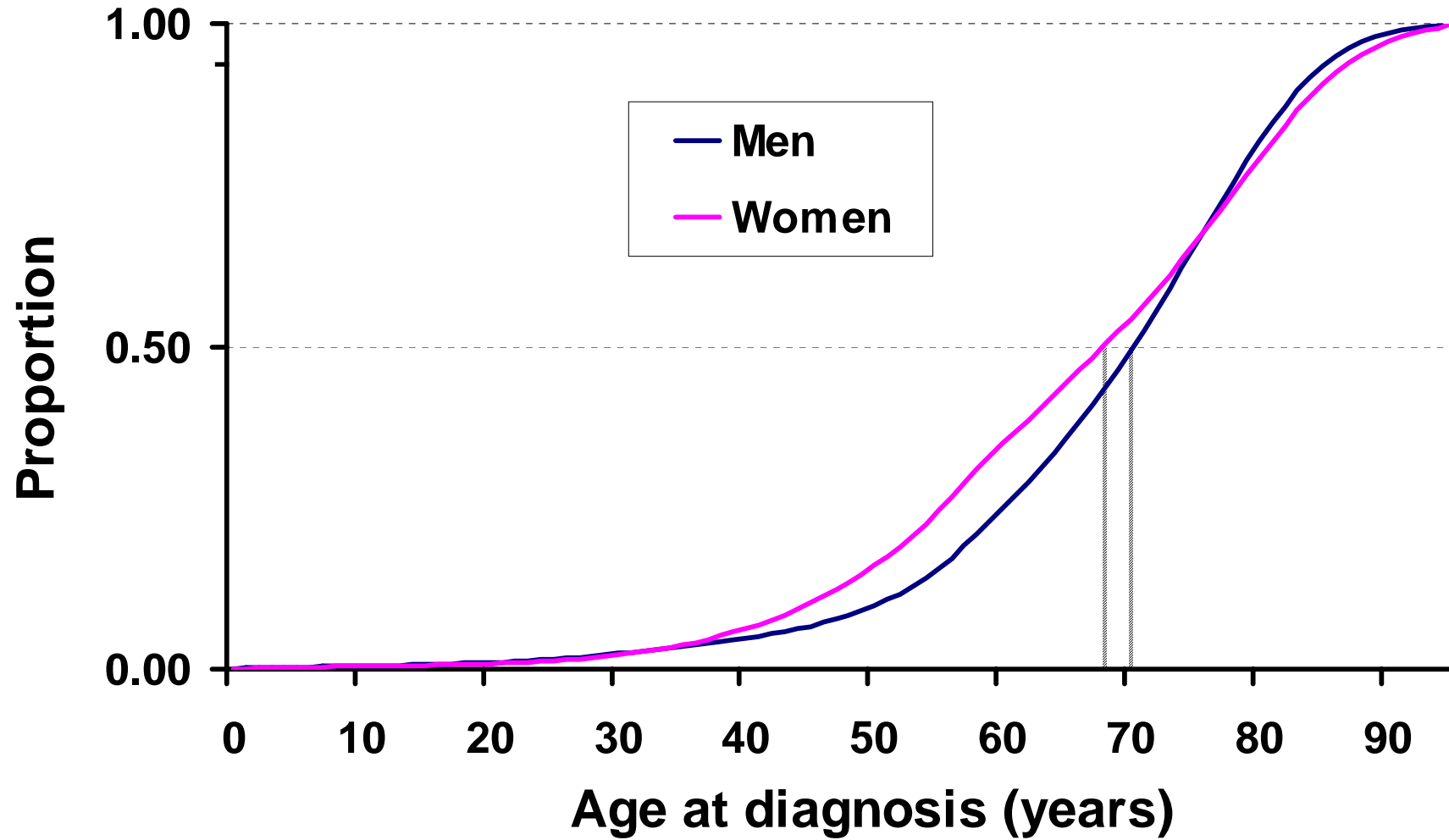


Representativeness

- A certain selection of participants
 - High-risk individuals expected low participation
 - Blood donors required to be healthy
 - Oversampling from certain counties
 - But: is this important for prospective cancer studies??
- Many studies performed on questionnaire data and clinical data (Janus subcohorts)

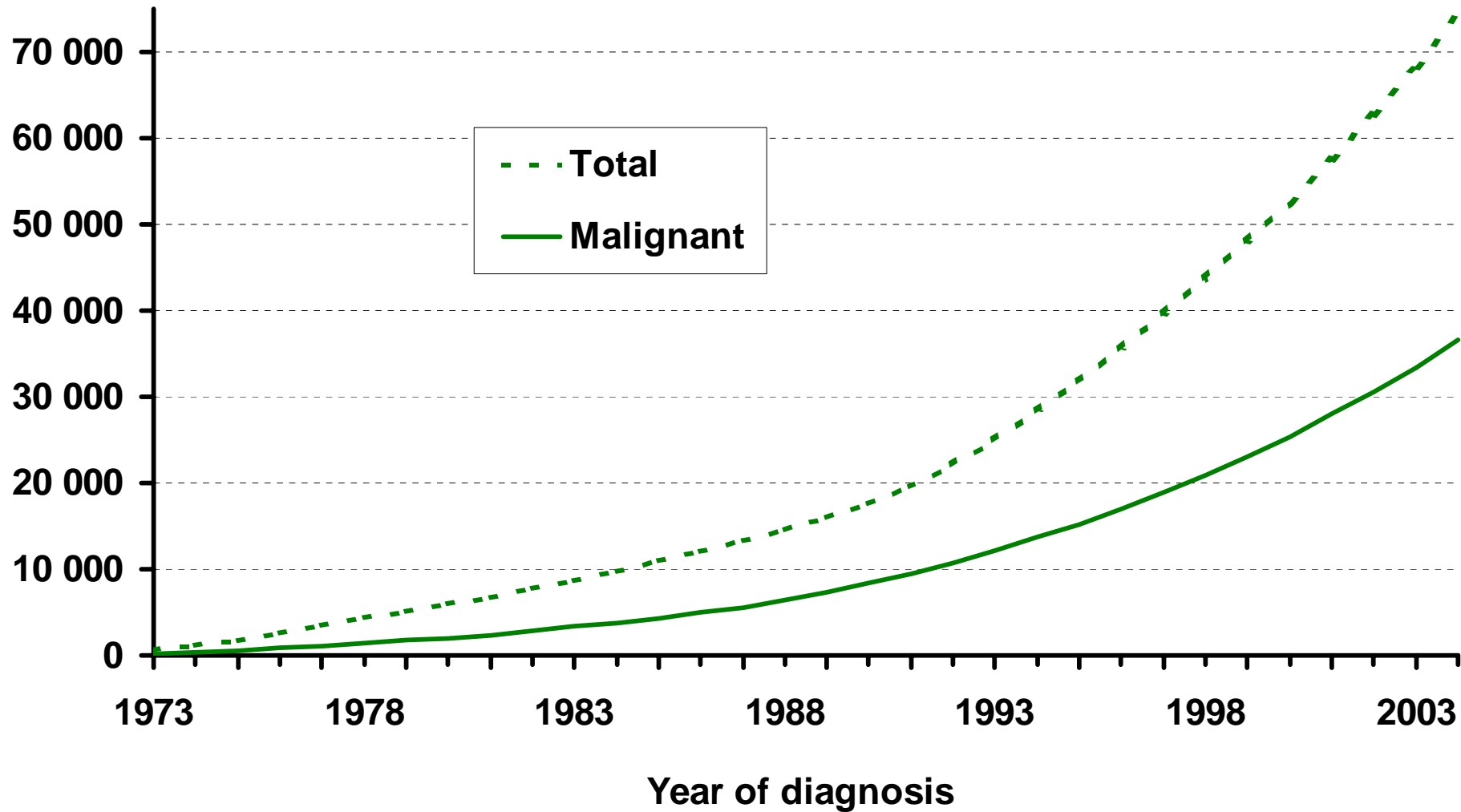


Cancer in Norway 2000-2004





Accumulated no. of cancers, Janus





Observed and expected cases

Men from health surveys, cancers diagnosed 1973–2003, reference: national population

| | Observed | Expected | SIR* | 95% CI |
|---|----------|----------|------|-------------|
| Total number of cancers | 13 689 | 14 424.3 | 0.95 | 0.93 – 0.97 |
| Alcohol and tobacco associated cancers† | 169 | 202.26 | 0.84 | 0.76 – 0.88 |

* Standardised Incidence Ratio

† Oral cavity, larynx, pharynx, oesophagus, liver



Observed and expected cases

Women from health surveys, cancers diagnosed 1973–2003, reference: national population

| | Observed | Expected | SIR* | 95% CI |
|---|----------|----------|------|-------------|
| Total number of cancers | 13 689 | 14 424.3 | 0.95 | 0.93 – 0.97 |
| Alcohol and tobacco associated cancers† | 169 | 202.26 | 0.84 | 0.76 – 0.88 |
| Cervical cancer | 497 | 613.82 | 0.81 | 0.74 – 0.88 |

* Standardised Incidence Ratio

† Oral cavity, larynx, pharynx, oesophagus, liver



From charity to big business?

- Sponsored by the Norwegian Cancer Society from 1973 to 2005
- Charity based, low cost project
- No uniform volumes, no preparation other than separation of serum
- Need of systematic updating of quality control and regulations



Formalities

- Janus Serum Bank transferred to Cancer Registry of Norway
- Scientific Board (applications)
- Concessions
 - Data inspectorate
 - National Committees for Research Ethics
 - Directorate for Health and Social Affairs



Further information

- www.kreftsaken.no
- Rules and regulations
- Publications
- Contact address: janus@kreftregisteret.no

