Scientific output of 13 Swedish research projects

with available blood samples and health data – A bibliometric analysis

BIOBANK
SVERIGE

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SCIVAL REPORTS

Preface

This report is a follow-up to the digital brochure *Fifteen Swedish research projects with blood samples and health data available for future research*.

In this report we aim to present a factual basis regarding the scientific output of selected Swedish research projects with sample collections during the period 2016–2020. We have chosen to use SciVal's standard model for bibliometric analysis in order to facilitate comparability with, for example, other national and international cohorts and research infrastructures.

We hope that these data will aid future analysis, discussions, and strategic decisions regarding how to achieve a sustainable development of research that utilises Swedish cohorts with sample collections.

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This report is a follow-up to the digital brochure Fifteen Swedish research projects with blood samples and health data available for future research.

Acknowledgements

Abbreviations

EIMS	Epidemiological Investigation of Risk Factors for Multiple Sclerosis
EPIC	The European Prospective Investigation into Cancer and Nutrition
GWAS	Genome Wide Association Studies
HGCC	Human Glioblastoma Cell Cultures
IMSE	The Immunomodulation and Multiple Sclerosis Epidemiology study
KARMA	Karolinska Mammography Project for Risk Prediction of Breast Cancer
MDC	Malmö Diet Cancer
MEDIM	The Importance of Migration and Ethnicity for Diabetes Development in Malmö
MOS	Malmö Offspring Study
MPP	Malmö Preventive Project
MS	Multiple Sclerosis
NSHDS	Northern Sweden Health and Disease Study
SIMPLER	Swedish Infrastructure for Medical Population-Based Life-Course and Environmental Research
STR	Swedish Twin Registry
TEDDY	The Environmental Determinants of Diabetes in the Young
U-CAN	Uppsala-Umeå Comprehensive Cancer Consortium
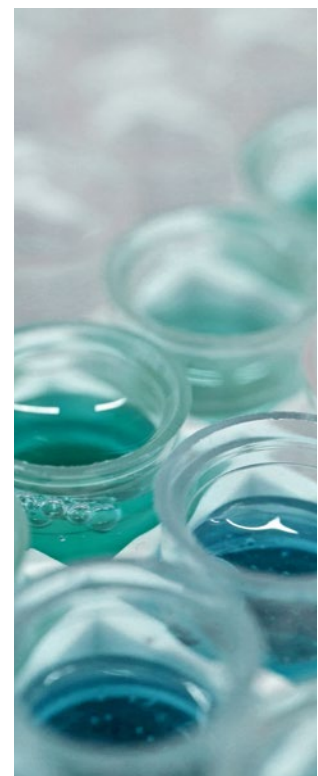
Methods

Study inclusion

Fifteen cohorts included in the previous report *Fifteen Swedish research projects with blood samples and health data available for future research* were invited to submit publication lists for the five-year period 2016–2020, listing publications where the cohorts' health data and/or samples had been used.

The Malmö cohorts submitted a joint publication list for the Malmö Preventive Project, Malmö Diet Cancer, and the Malmö Offspring Study due to the large overlap in publications between the three cohorts. Two of the more recent studies included in the previous report, SCAPIS and BIG3, declined to take part in the bibliometric analysis since biological samples are not yet available to external researchers in these studies.

> **"** the bibliometric analyses were based on 11 submitted publication lists

As a result, the bibliometric analyses were based on 11 submitted publication lists. Publications published during 2016–2020 that were available in Scopus at the time of data extraction (Date of data extraction: 2022-04-27) were included in the analysis. Published errata were excluded.

Biobliometric reports in SciVal

A slightly customised version of SciVal's overview report, with the addition of Keyphrase analysis, Publications by Journal quartile, and Most cited publications, was used to generate bibliometric reports for the standard year range 2016–2020 for each publication list. A summary overview report was also generated for a joint list of all 1785 publications.

It is important to note that a few metrics in the overview report are based on Field-Weighted Citation Impact. Field-Weighted Citation Impact in SciVal indicates how the number of citations received by an entity's publications compares with the average number of citations received by all other similar publications (with the same publication year, publication type, and discipline) in the data universe.

The citations received in the year in which an item was published, and the following 3 years, are counted for in this metric.

In the SciVal overview reports the Field-Weighted Citation Impact is presented by year of publication. A number of these bar charts give an impression of a downward trend. This trend is likely to be an artefact produced by calculating the mean Field-Weighted Citation Impact in a relatively small data set that includes a few very highly cited publications. Highly cited publications may skew the Field-Weighted Citation Impact in data sets with a scholarly output less than 1000 publications.

In addition, some of the larger and older cohorts are part of research consortiums that generate a large number of publications. For example, the Northern Sweden Health and Disease Study (NSHDS) and Malmö Diet Cancer (MDC) are both part of The European Prospective Investigation into Cancer and Nutrition (EPIC) study. To assess how being a part of EPIC has impacted publication metrics, a second bibliometric analysis was conducted for NSHDS after publications generated through the EPIC cohort had been removed.

Manual analysis of collaborations

In the SciVal reports the Scholarly Output by amount of international, national, and institutional collaboration is presented, where institutional collaboration represents any publication where all authors have the same affiliation (regardless of institution).

In order to assess institutional collaboration within and outside the cohort´s host institution, raw data regarding

co-authors affiliations (country and institution) were exported from SciVal. The publications were re-assigned a single collaboration type based on the following categories:

1. Within host institution. All co-authors had affiliations to the cohort´s host university or university hospital. For example, for cohorts managed by Karolinska Institutet, Karolinska Institutet and Karolinska University Hospital were both regarded as host institution.
2. Within Sweden. All authors had affiliations within Sweden only, but at least one co-author had an affiliation outside of the host institution.
3. Within EU/EES. At least one co-author had an affiliation outside of Sweden but within EU/EES. UK was also included in this category as the majority of publications were published before BREXIT.
4. At least one co-author had an affiliation outside the EU/EES or the UK.

Manual analysis of last author affiliations

Similarly, raw data on last author affiliations were retrieved from Scopus for each publication list. In total, 38 publications where the last author affiliation was UNKOWN (i.e., where the author was not linked to an address in Scopus) and two publications that did not contain any author information were excluded.

Each publication was manually assigned to one of the following categories:

1. Last author had an affiliation within the host institution (similarly as above).
2. Last author had no affiliation to the host institution but had an affiliation within Sweden.
3. Last author had no affiliation within Sweden but had an affiliation within EU/EES or UK.
4. Last author only had no affiliation within EU/EES or UK.

The last author affiliation was used as a proxy of the primary origin of the research. However, scoring "last author" as the author with overall responsibility has limitations. Author positions in medical science are increasingly moving away from the traditional first author/last author standard. For example, in large author lists, the first few authors are often responsible and remaining authors (including last author) may be published in alphabetical order. The affiliation of the corresponding author could perhaps have been a more representative proxy, however the data on corresponding author is often incomplete in SCOPUS making it difficult to use.

Summary – bibliometric analysis of all publications

During the 5-year period 2016-2020, health data and/or samples from the 13 Swedish cohort studies included in this report have been used in 1785 publications. These publications include over 17 000 unique co-authors and have generated more than 78 000 citations in total (Appendix i). Over 25% (N = 458) of the publications are considered to be among the top 10% most cited publications in the world.

The publications are results of national and international studies of different sizes, often written in collaboration with some of the world's leading research institutes (Figure 1A, Table 1). Slightly more than half of the studies had a Swedish last author (Figure 1B).

A.

Collaborations

- Within Sweden
- Within EU/EES
- Outside EU/EES

B.

Last author affiliation

- Within Sweden
- Within EU/EES
- Outside EU/EES
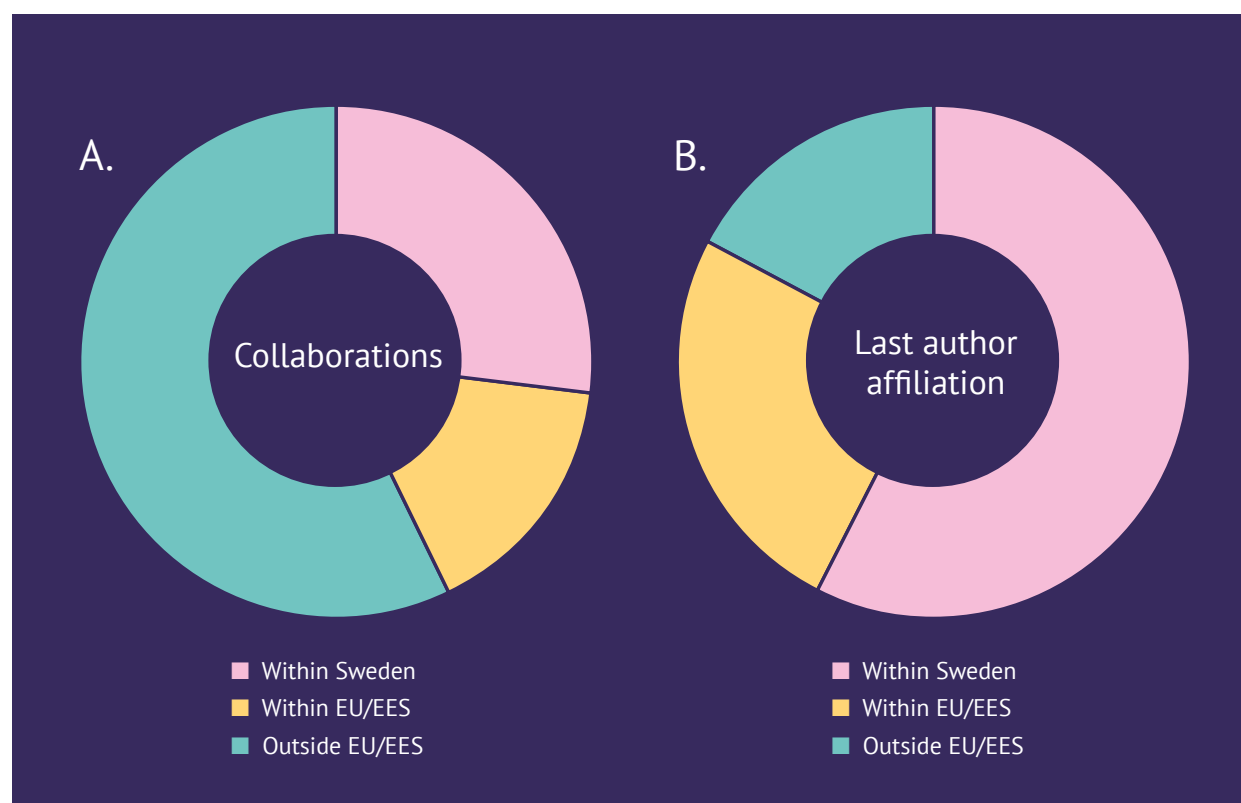
Figure 1. Pie charts showing collaborations and last author affiliation. A) Proportion of publications with co-authors from within Sweden only, from within EU/EES and UK, or including co-authors from outside of the EU/EES and UK. B) Proportion of publications where the last author had an affiliation within Sweden, within EU/EES and UK, or outside of the EU/EES and UK, as a proxy of the principle origin of the conducted research. Data source: Scopus. Year Range: 2016–2020.

Institution	Scholarly Output	Citations per Publication
Karolinska Institutet	1,052	56.1
Lund University	715	51.2
Umeå University	494	52.2
Harvard University	404	115.9
Uppsala University	352	72.3
Imperial College London	344	109.4
University of Oxford	337	119.7
National Institutes of Health	318	98.2
Inserm	308	88.0
University of Cambridge	308	117.5

Table 1. The institutions with the highest scholarly output in the set of 1785 publications, along with the mean number of citations per publication. Data source: Scopus. Year Range: 2016-2020.

The cohorts' scholarly output is correlated to the cohort size (Figure 2). The larger cohorts are typically older and have produced more publications during the five-year period.
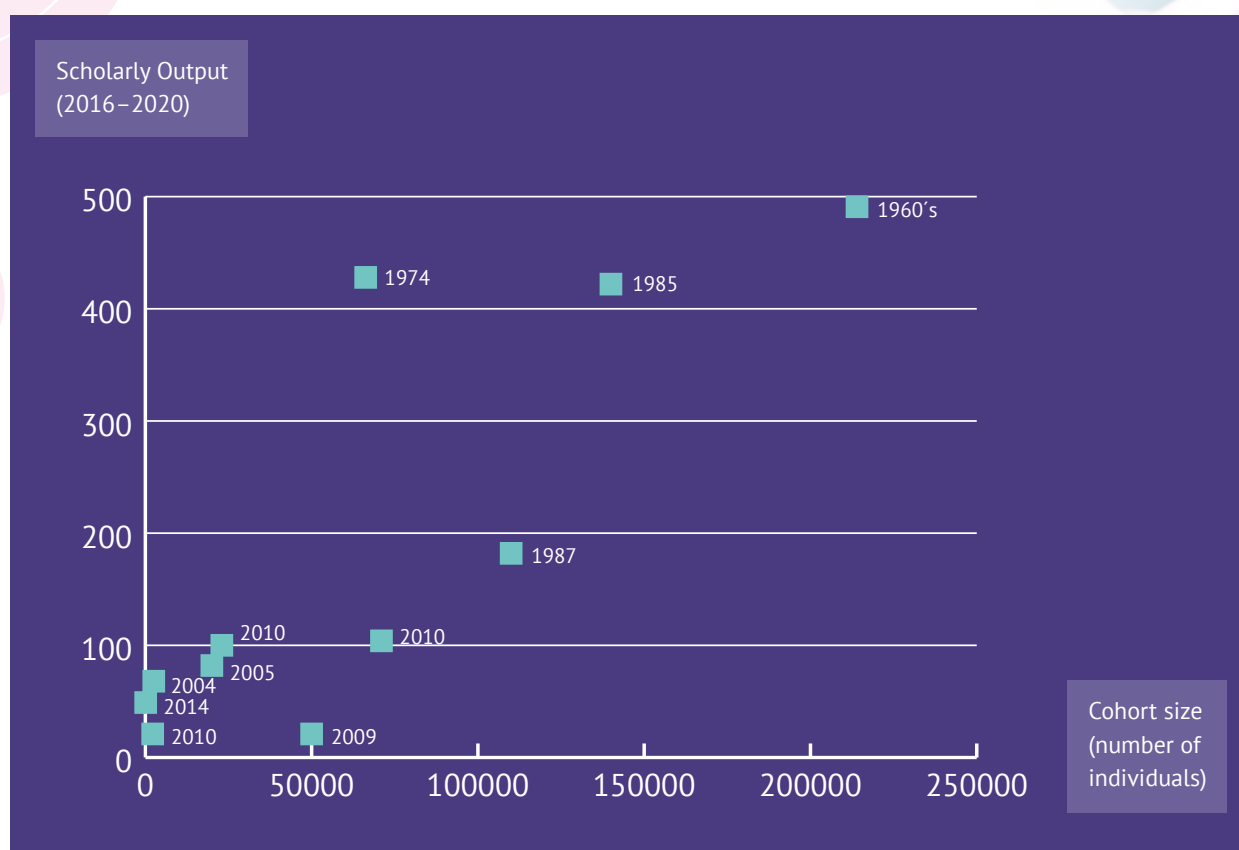
Figure 2. Scatter plot of the scholarly output (number of publications during 2016-2020) over cohort size. Data labels indicate the year the study cohort started.

The pairwise matrix (Table 2) shows co-occurrences of publications between different cohorts. The diagonal shows the number of publications in Scopus for each given cohort. The large number of co-occurring publications between NSHDS and the Malmö Cohorts is largely due to both being part of the EPIC cohort.

Few studies have combined data or samples from more than one cohort. Among the 1785 publications, 166 publications co-occurred in two publication lists (of which 72 were EPIC studies), seven publications co-occurred in three publication lists, and one publication co-occurred in four publication lists. The eight publications that occurred in more than two publication lists were predominantly Genome Wide Association Studies (GWAS) based on GWAS data from the larger cohorts (NSHDS, STR, the Malmö Cohorts, and SIMPLER).

To assess how being part of large consortiums such as EPIC has impacted publication metrics, a second bibliometric analysis for NSHDS was conducted after publications generated through the EPIC cohort had been removed (Appendix ii and Appendix iii). The main impact was on the number of publications. The impact on other SciVal metrics was small.

After noting a downward trend in the Field-Weighted Citation Impact in the summary report and some of the larger publication lists (NSHDS, STR, EIMS/IMSE), we looked at the top 20 publications with the highest Field-Weighted Citation Impact. After tabulating the publication year and to which cohort these publications belonged, it was clear that these highly cited outliers had skewed the trends over time through their individual impact on specific years (Table 3).

	NSHDS	LifeGene	STR	Malmö cohorts	SIMPLER	U-CAN	KARMA	HGCC	MEDIM	TEDDY	EIMS & IMSE
NSHDS	422										
LifeGene		21									
STR	16	3	491								
Malmö cohorts	93		9	428							
SIMPLER	26		2	2	182						
U-CAN	4					100					
KARMA	3	1	2		12		104				
HGCC						10		49			
MEDIM				2					21		
TEDDY										68	
EIMS & IMSE		2	5				1				82

Table 2. Co-publications between cohorts. A pairwise matrix showing the number of co-occurring publications between two cohorts. The diagonal shows the number of publications in Scopus for each given cohort.

Rank	Field-Weighted Citation Impact	Publication Year	Cohort	Rank	Field-Weighted Citation Impact	Publication Year	Cohort
1	281	2016	NSHDS	11	57	2020	U-CAN
2	261	2017	NSHDS + Malmö	12	47	2019	STR
3	248	2016	STR	13	46	2017	U-CAN
4	218	2016	Malmö	14	44	2019	STR
5	193	2020	Malmö	15	44	2019	Malmö
6	110	2017	Malmö	16	40	2018	STR
7	83	2017	Malmö	17	39	2018	EIMS/IMSE
8	64	2018	NSHDS + Malmö	18	37	2016	Malmö
9	59	2016	Malmö	19	36	2016	STR
10	59	2018	STR	20	33	2016	SIMPLER

Table 3. Top 20 publications with highest Field-Weighted Citation Impact.

Northern Sweden Health and Disease Study (NSHDS)

NSHDS is a large cohort with over 250 000 sample collection occasions. Health data and/or samples have primarily been used in prospective cohort-, case-control-, and/or genetic studies in cancer and other major noncommunicable diseases such as diabetes. NSHDS is part of several large international consortia, including EPIC, through which NSHDS samples and dietary data have been used in a large number of publications (Appendix ii and iii). This may have contributed to the large number of last authors who have affiliations within the EU/EES but not in Sweden.

Summary metrics

Study design:	Prospective cohort –general population
Recruitment:	1986-ongoing
Cohort size:	140 000
Host institution:	Umeå University
Scholarly Output (2016–2020):	422
Number of citations:	19 334
Number of co-authors:	6555
Citations per publication:	45.8
Field-Weighted Citation Impact:	3.74
Publications in top 10% most cited:	120 (28.4%)
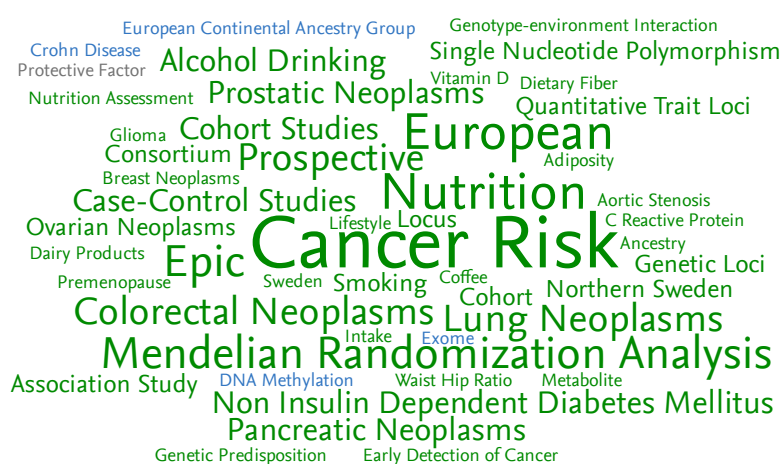
Keyphrase analysis

Entity: NSHDS
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

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Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

LifeGene

LifeGene is a newer cohort with 30 000 sample collection occasions. The lower scholarly output may be explained by LifeGene being a more recent study. Health data and/or samples have primarily been used in epidemiological studies investigating associations between exposure and outcome of somatic and mental health. The last author affiliations show that a large proportion of the studies were led by Karolinska Institutet (host institution), and the other six Swedish universities with medical faculties that stand behind LifeGene.

Summary metrics

Study design:	Prospective cohort –general population
Recruitment:	2009–2019
Cohort size:	50 000
Host institution:	Karolinska Institutet
Scholarly Output (2016–2020):	21
Number of citations:	467
Number of co-authors:	414
Citations per publication:	22.2
Field-Weighted Citation Impact:	2.12
Publications in top 10% most cited:	3 (14.3%)

Keyphrase analysis

Entity: LifeGene
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

The Swedish Twin Registry (STR)

STR is a large cohort with DNA from 60 000 twins and serum from 12 600 twins. Health data and/or samples have primarily been used in twin- and genome wide association studies. The twin design has, for example, been used to assess confounding genetics and the impact of shared environmental conditions when growing up. Two thirds of the studies have been conducted with collaborators outside of the EU/EES. Approximately half the publications have a last author affiliated to Karolinska Institutet.

Summary metrics

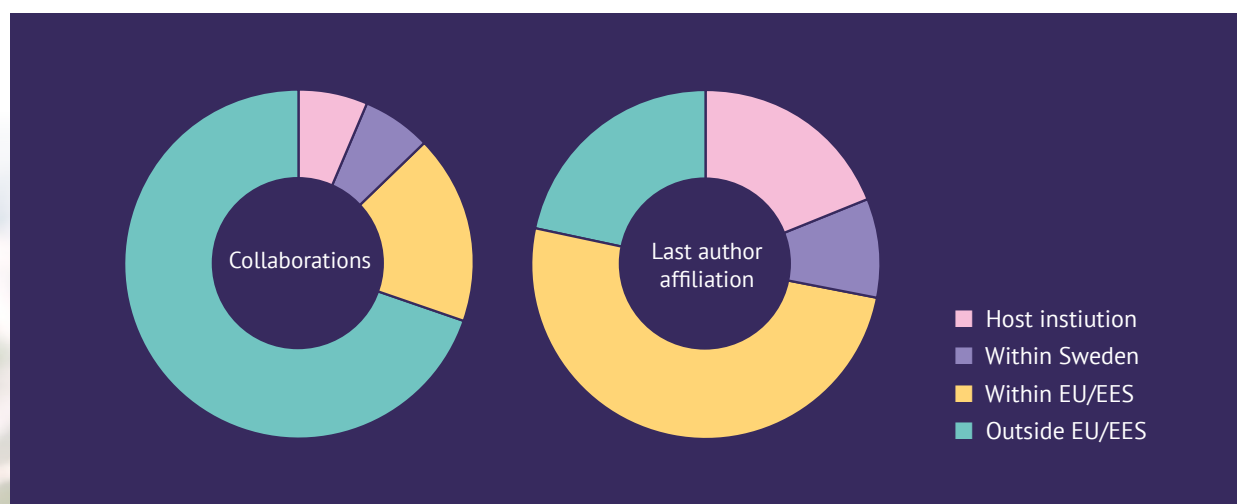|	
Study design:	Prospective cohort – Twins
Recruitment:	1960's–ongoing
Cohort size:	107 000 sets of twins
Host institution:	Karolinska Institutet
Scholarly Output (2016–2020):	491
Number of citations:	26 957
Number of co-authors:	6203
Citations per publication:	54.9
Field-Weighted Citation Impact:	3.48
Publications in top 10% most cited:	137 (27.9%)

Keyphrase analysis

Entity: STR
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022
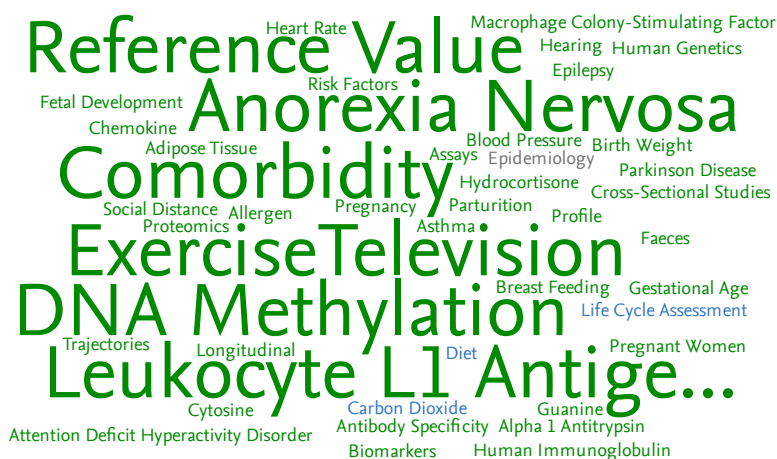
A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

The Malmö cohorts:

Malmö Preventive Project (MPP), Malmö Diet and Cancer Study (MDC), and Malmö Offspring Study (MOS)

The Malmö Cohorts comprise over 100 000 sample collection occasions combined. Health data and/or samples have been used in prospective cohort- and genetic studies in cancer and other major noncommunicable diseases such as diabetes and cardiovascular disease. Malmö Diet Cancer is part of the EPIC cohort through which many studies investigate the relationships between diet, nutritional status, lifestyle and environmental factors, and the incidence of cancer and other chronic diseases. Approximately half the publications have a last author affiliated to Lund University or Skåne University Hospital.

Summary metrics

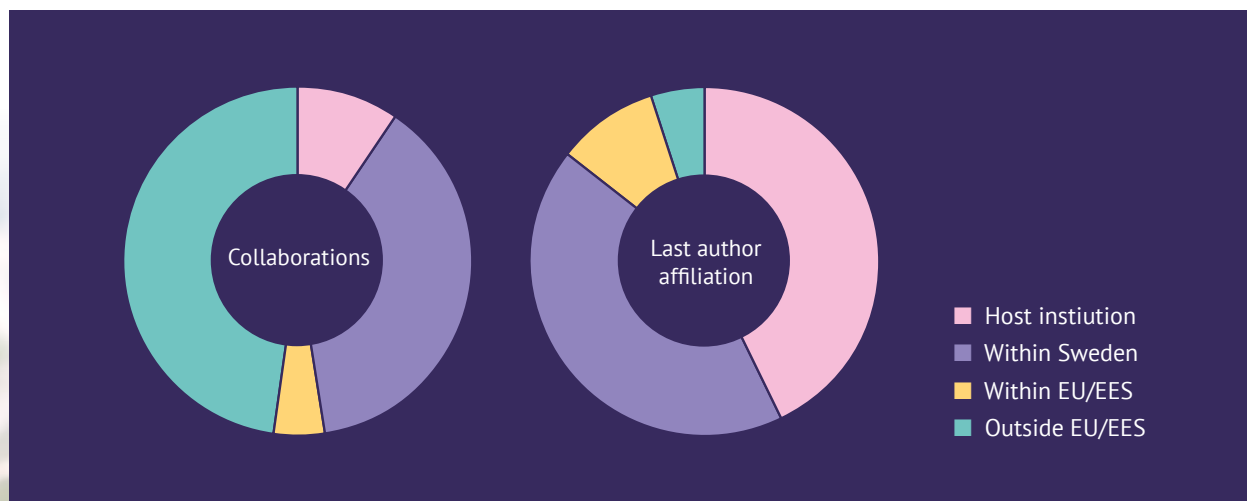|	
Study design:	Prospective cohort –general population
Recruitment:	1974–2021
Cohort size:	33 000 + 28 000 + 5 250
Host institution:	Lund University
Scholarly Output (2016–2020):	428
Number of citations:	22 824
Number of co-authors:	5970
Citations per publication:	53.3
Field-Weighted Citation Impact:	4.62
Publications in top 10% most cited:	116 (27.1%)

Keyphrase analysis

Entity: Malmökohorterna
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022
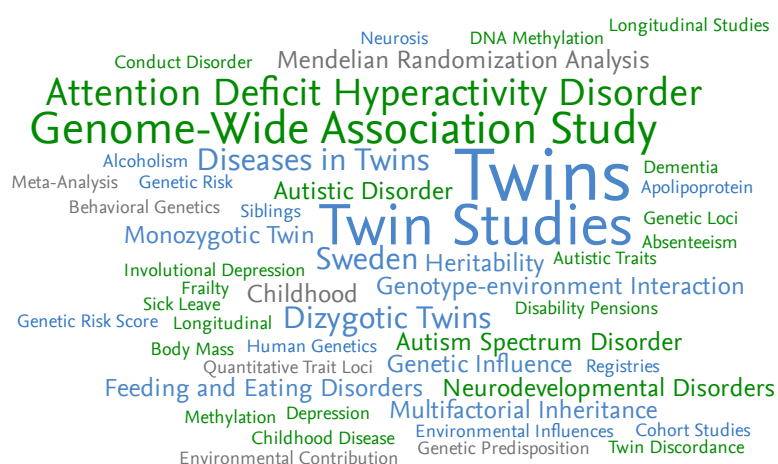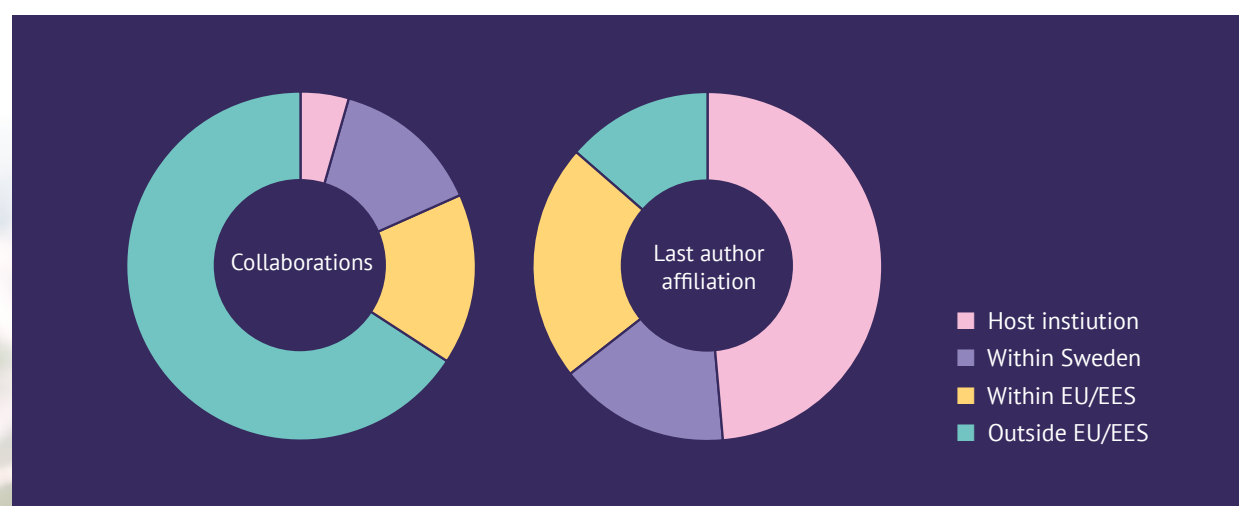
A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

Swedish Infrastructure for
Medical Population-Based Life-Course and Environmental Research (SIMPLER)

SIMPLER comprises in total around 50 000 DNA samples with additional biological samples available from 12 400 individuals. Health data and/or samples have primarily been used in cohort- and genetic studies in cancer and other major noncommunicable diseases with a focus on dietary intake. Almost two thirds of the studies have been conducted with collaborators outside of the EU/EES. Around half of the publications have a last author affiliated to Uppsala University or Karolinska Institutet.

Summary metrics

Study design:	Prospective cohort –general population
Recruitment:	1987–1990 + 1997–1998
Cohort size:	110 000
Host institution:	Uppsala University, previously Karolinska Institutet
Scholarly Output (2016–2020):	182*
Number of citations:	6456
Number of co-authors:	3049
Citations per publication:	35.5
Field-Weighted Citation Impact:	2.61
Publications in top 10% most cited:	56 (30.8%)

After updating their publication list, SIMPLER notified that 188 publications were published during 2016-2020.

Estrogen Receptor Non Insulin Dependent Diabetes Mellitus Chronic Obstructive Lung Disease Cancer Susceptibility Polychlorinated Biphenyls Fruit Consumption Cohort Studies Mediterranean Diet Heart Infarction Meta-Analysis Atrial Fibrillation Femur Subtrochanteric Fracture Alcohol Drinking Prostatic Neoplasms Aortic Stenosis Consortium Leisure Fish Consumption Premenopause Lifestyle Prospective Studies Genome-Wide Associa... Eating Habit Prospective Breast Neoplasms Sweden Diet Ovarian Neoplasms Consumption Cohort Biliary Tract Neoplasms Cancer Risk Processed Meat Meat Consumption Gallbladder Neoplasms Pooling Red Meat Dietary Fiber Cardiovascular Disease Heart Failure Fruits and Vegetables Colorectal Neoplasms Mendelian Randomization Analysis Genetic Loci Coffee Consumption Quantitative Trait Loci

Keyphrase analysis

Entity: SIMPLER
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

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Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

Uppsala-Umeå Comprehensive Cancer Consortium (U-CAN)

U-CAN is a biobank resource actively collecting samples and data from cancer patients in a longitudinal manner (i.e., repeated samples from the same patient during the course of the disease). As of 2022, over 24 000 individuals have consented to participate in U-CAN in Uppsala and Umeå. Health data and/or samples have been used in a wide range of scientific questions related to multiple forms of cancer including studies regarding tumour biomarkers, tumour biology, genetic variations, and epigenetics. Almost two thirds of the publications have a last author affiliated to one of the two host institutions, and almost half the studies have been conducted with international collaborators.

Summary metrics

Study design:	Cancer patients
Recruitment:	2010–ongoing
Cohort size:	24 000
Host institutions:	Uppsala University and Umeå University
Scholarly Output (2016-2020):	100*
Number of citations:	3730
Number of co-authors:	807
Citations per publication:	37.3
Field-Weighted Citation Impact:	2.45
Publications in top 10% most cited:	20 (20.0%)

* After updating their publication list, U-CAN notified that 105 publications were published during 2016–2020.

Blood Proteins DNA Methylation
Androgen Receptors Prostatic Neoplasms Colon Tumor
Lymphoma Sweden Ki 67 Antigen
Cancer Stem Cell
Breast Neoplasms
Epigenetics DNA Tumor Biomarker Profile Transcriptome
Cancer Patients Breast
Cancer Staging Glioblastoma Glioma
Sequencing Pre-test ErbB-2 Receptor
Methylation Colorectal Neoplasm...
Aggressiveness
Acute Lymphoblastic Leukemia
Genetic Database
Chemoradiotherapy Bone Neoplasms Bone Metastasis
Germ Cells Renal Cell Carcinoma
CpG Islands Rectum Tumor
Copy number Variation
Triple Negative Breast Neoplasms
Homeobox Genes
Whole Exome Sequencing Survival Network Analysis

Keyphrase analysis

Entity: U-CAN
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

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Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

Karolinska Mammography Project
for Risk Prediction of Breast Cancer (KARMA)

KARMA links a comprehensive information and image database with blood samples from all participants. Around 25% of participants have provided repeated samples. Samples and data have primarily been used in case control- and genetic studies for studying factors that influence the risk or prognosis for breast cancer. KARMA is part of the Breast Cancer Association Consortium, which may have contributed to the large proportion of international collaborations. Almost half the studies have a last author affiliated to Karolinska Institutet or Södersjukhuset Stockholm.

Summary metrics

Study design:	Prospective cohort – females attending mammography screening
Recruitment:	primarily 2010–2013
Cohort size:	71 000
Host institutions:	Karolinska Institutet and Södersjukhuset Stockholm
Scholarly Output (2016-2020):	104
Number of citations:	3785
Number of co-authors:	2763
Citations per publication:	36.4
Field-Weighted Citation Impact:	2.19
Publications in top 10% most cited:	26 (25.0%)

Keyphrase analysis

Entity: KARMA
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

Human Glioblastoma Cell Cultures (HGCC)

HGCC is a collection of 100 well-characterised cell lines derived from surgical samples from patients with glioblastoma. The cell lines have been used in research requiring Glioblastoma stem cell cultures to answer research questions related to basic biology and/or drug development. The cell lines have been used in collaboration with 50 laboratories in 17 countries, which may have contributed to an even distribution of national collaborations, international collaborations within EU/EES, and international collaborations outside of EU/EES. Around 40% of the publications had a last author affiliated to the host institution.

Summary metrics

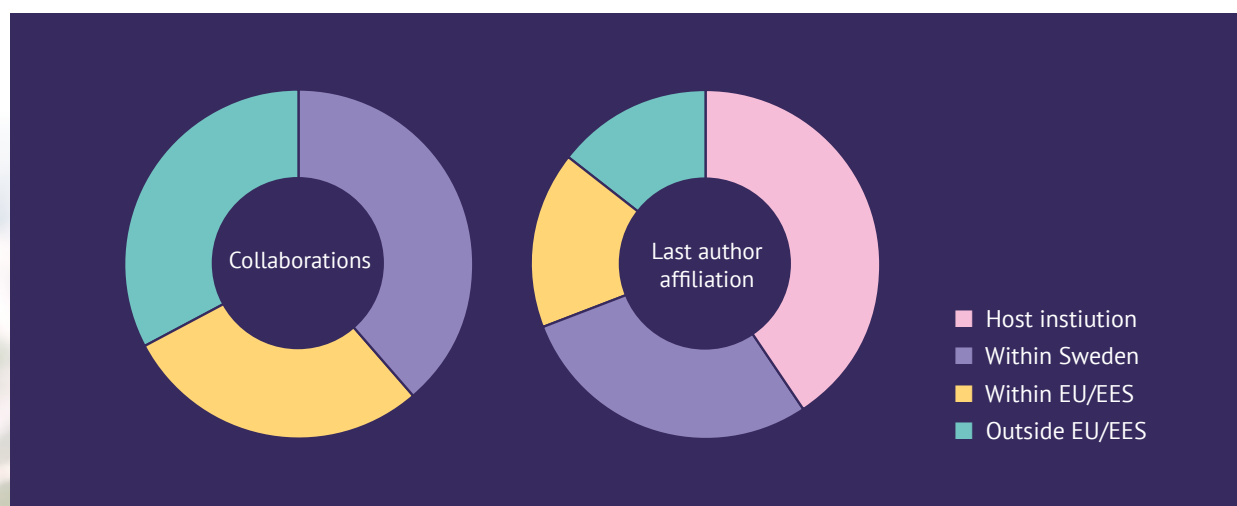|	
Study design:	Cell lines derived from surgical samples from patients with glioblastoma
Recruitment:	Not applicable
Cohort size:	100 cell lines
Host institution:	Uppsala University
Scholarly Output (2016-2020):	49
Number of citations:	896
Number of co-authors:	403
Citations per publication:	18.3
Field-Weighted Citation Impact:	1.31
Publications in top 10% most cited:	7 (14.3%)

Keyphrase analysis

Entity: HGCC
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

The Importance of Migration and Ethnicity for Diabetes Development in Malmö (MEDIM)

MEDIM is a small cohort with blood samples and cross-sectional data collected from all 2220 participants. The samples and data have primarily been used in locally led research projects, as evidenced by the majority of last authors in the 21 publications being affiliated to Lund university or Skåne University Hospital. The studies have looked at country of birth and risk of type 2 diabetes, including analysis of metabolic biomarkers and mechanisms of glucose regulation.

Summary metrics

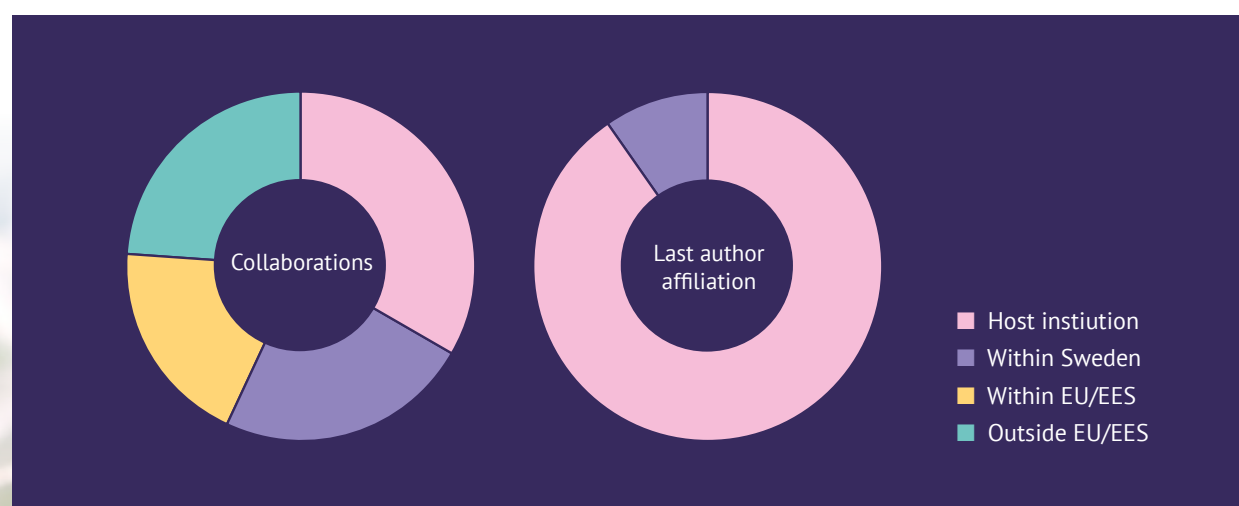|	
Study design:	Prospective cohort – adults born in Iraq or Sweden and living in Malmö
Recruitment:	2010–2012
Cohort size:	2220
Host institution:	Lund University
Scholarly Output (2016-2020):	21
Number of citations:	150
Number of co-authors:	56
Citations per publication:	7.1
Field-Weighted Citation Impact:	0.73
Publications in top 10% most cited:	0 (0.0%)
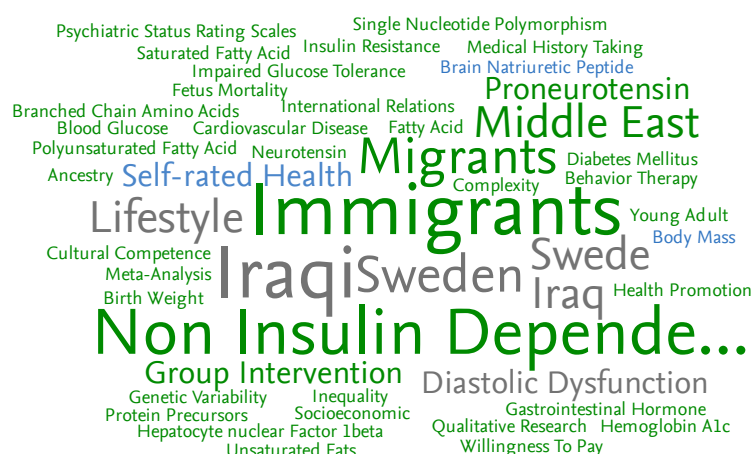
Keyphrase analysis

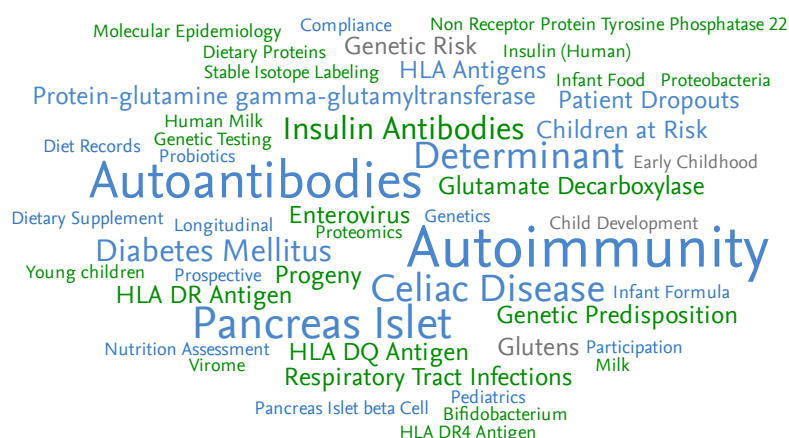Entity: MEDIM
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

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Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

The Environmental Determinants of Diabetes in the Young (TEDDY)

Teddy is an international cohort including children with increased hereditary risk of autoimmune diabetes in Skåne, Finland, Germany, and USA. Children are followed to the age of 15 with multiple sample collection occasions each year. Samples and data, including screening-, baseline-, study phase clinical data, and multiple analysis datasets, are made available through the National Institutes of Health in the United States. This may contribute to the lack of national collaborations within Sweden, and the majority of studies including collaborators in the United States. Studies have mainly focused on autoimmune disease in young children including the impact of dietary intake.

Summary metrics

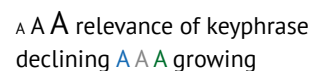|	
Study design:	Prospective cohort – children with increased hereditary risk of autoimmune diabetes
Recruitment:	2004–2010
Cohort size:	8667 of which 2528 in Sweden
Host institution:	Lund University
Scholarly Output (2016-2020):	68
Number of citations:	2483
Number of co-authors:	585
Citations per publication:	36.5
Field-Weighted Citation Impact:	2.78
Publications in top 10% most cited:	19 (27.9%)

Keyphrase analysis

Entity: TEDDY study
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

EIMS & IMSE

Epidemiological Investigation of Risk Factors for Multiple Sclerosis (EIMS) and The Immunomodulation and Multiple Sclerosis Epidemiology study (IMSE) are a case-control study and a collection of clinical trials in Multiple Sclerosis (MS), respectively. Samples have primarily been used in genetic studies, for example in assessing genotype-environment interactions. Around two thirds of the studies have a last author affiliated to the host institute, with around 60% of the studies having been conducted with collaborators outside of the EU/EES.

Summary metrics

Study design:	Case-control and clinical trials in MS
Recruitment:	2005 – ongoing
Cohort size:	12 000 MS patients and 8000 controls
Host institution:	Karolinska Institutet
Scholarly Output (2016-2020):	82
Number of citations:	5278
Number of co-authors:	2272
Citations per publication:	64.4
Field-Weighted Citation Impact:	4.83
Publications in top 10% most cited:	35 (42.7%)

Keyphrase analysis

Entity: EIMS & IMSE
Year range: 2016 to 2020
Data source: Scopus, up to 27 Apr 2022

A A A relevance of keyphrase declining A A A growing

Collaborations

Last author affiliation

- Host instiution
- Within Sweden
- Within EU/EES
- Outside EU/EES

BIOBANK
SVERIGE