



Annual Report 2017

VISJON

NTNU – Knowledge for
a Better World

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Human body drew record visitor numbers	3
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COVER: Sámi tool holder in brass.
It was attached to a belt to hang tools from. The holder is 6 x 7 cm.



The human body drew record visitor numbers

"Gunther von Hagens' BODY WORLDS Vital" is an international travelling exhibition presented for the first time in Norway, reflecting NTNU's strategic area of "Health". The exhibition lasted just over four months in the summer of 2017 and attracted more than 53,000 visitors. This was a collaboration between the Museum, the science centre Vitensenteret i Trondheim and the Royal Norwegian Society of Sciences and Letters. Trondheim was the only venue for the exhibition in Norway.

The museum wants to develop arenas where visitors discover science in innovative ways that promote social engagement. "BODY WORLDS Vital" shows real human bodies that have been plastinated. This provoked and engaged the public, sparking discussions and reflection.

In connection with the exhibition, a panel discussion entitled "Dead body, new science?" took place at Litteraturhuset in Trondheim in collaboration with NTNU's Faculty of Medicine and Health Sciences. NRK, the Norwegian Broadcasting Corporation, broadcast the event on its Knowledge Channel in September.

The project "Your Body in Motion", funded by the Norwegian Research Council, was also arranged during the exhibition. This was a test station where people could test aspects of their own physical fitness. The Museum, the NTNU Centre for Elite Sports Research and Vitensenteret i Trondheim collaborated on this project. More than 9,000 children, teens and adults visited the activity in the Museum area, during the Starmus festival, National Science Week and the Toppidrettsveka sports week. Visitors could participate in tests and activities as well as meeting researchers and experts in anatomy, physiology and biomechanics.

I. MUSEUM DIRECTOR'S REPORT

WHAT YOU GIVE ATTENTION, GETS ATTENTION

As a small unit at NTNU, we have several advantages. We can adapt faster than most others, and we achieve positive effects from the tasks we give priority. When we pay attention to NTNU's working environment surveys, these capture employees' attention. We are pleased that the Museum again excels with a high participation rate, this time together with the University Administration.

For any organization, its people are its most important resource. When the survey shows that many employees experience great time pressure at work, we must act. Our hard-working administration therefore deserves praise. Despite staff reductions in recent years, they have succeeded in providing excellent service to the specialized units, contributing to a historically high level of collaborative and commissioned activity ("BOA") in 2017.

2017 – a good year for the many staff members responsible for dissemination and outreach

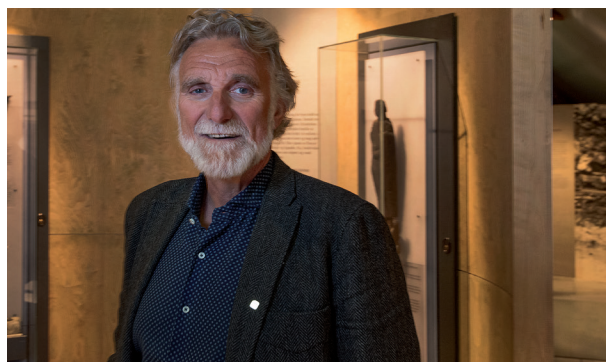
The year had the best possible start. Launched by Trondheim's mayor, the exhibition "Who Owns the Story?" opened to mark the 100th anniversary of the first national Sámi congress in Trondheim on 6 February 1917, "Tråante 2017". Over the years, our university has not always been precise in its communication of Sámi history. This was therefore a welcome opportunity to help spread more up-to-date knowledge.

The exhibition "BODY WORLDS Vital" and the project "Your Body in Motion" are discussed on the previous page, and I must refer to last year's report where I argued that we needed to get better at realizing our goals in teamwork with others. We certainly succeeded. Together with our good partners – the Vitensenteret science centre in Trondheim, The Royal Norwegian Society of Sciences and Letters (DKNVS) and the health science communities at NTNU, including the Centre for Elite Sports Research, we achieved historically high visitor numbers.

Strong development in many disciplines

I praise our staff members who are battling for better care and understanding of "the oldest history books" – rock art. These are vulnerable cultural heritage objects, and approval of funding to improve the situation should delight us and our descendants.

I am just as glad to report that the National Laboratory for Age Determination have completed their first full year of normal operation, after many teething problems.



Our employees have also found time to prepare a major international conference in 2018.

The NTNU University Museum is a key player in NTNU Sustainability. With a new and revitalized strategy, we have the greatest ambitions for further development of this thematic area.

A brighter future for our heirlooms?

Storage is a concern for all university museums. So it is gratifying to see more and more people advocating for museums in this respect. I hope that words will become actions in the coming years, and that we can show NTNU's other academic groups that well-curated scientific collections result in international research of high quality.

The inner life of the museum

As a key player in public outreach, we have also focused on how we should communicate natural and cultural history in our region. Many people have been involved in exploring how we can establish effective processes in this area. Outreach to an interested public is a strategically important area. Our two large specialist units have finally gained the status of departments after a long period of wandering in the wilderness, and the new Museum Board has already indicated that it would like to use them and their department councils actively in the strategic process ahead.

Museum Director
Reidar Andersen

THE MUSEUM BOARD

EXTERNAL REPRESENTATIVES:

Chair of the Board: Arnstein Hellem

General manager, SpareBank 1 SMN. Long experience from business-oriented banking activities with an extensive network among the region's organizations in the public, non-profit and private sectors.

Marit Anne Hauan

Associate Professor at Tromsø University Museum. Former Director of Tromsø Museum and Chair of the Norwegian Council for Higher Education's Museum Committee. Educated as a folklorist, she won the Brage Prize in non-fiction for "Nordnorsk kulturhistorie" (Cultural History of Northern Norway).

Borghild Lundeby

Master of Science in Engineering (sivilingeniør) in Industrial Economics and project manager of the 2030 millennium project at the Stiklestad National Cultural Centre. Has experience in managing projects at the intersection between culture, business and the public sector, as well as professional and research dissemination.

Sivert Bjørnstad

Politician with experience from Trondheim City Council and Sør-Trøndelag County Council. Has been a Member of the Storting for the Progress Party in Sør-Trøndelag since 2013. Was a member of the Storting's Standing Committee on Education, Research and Church Affairs and the Standing Committee on Business and Industry in 2013-2017. A member of the Standing Committee on Finance and Economic Affairs in 2017-2021. Has studied economics and management at BI Trondheim.

TECHNICAL AND ADMINISTRATIVE STAFF

Karstein Hårsaker

Appointed as a senior engineer at the Museum's Department of Natural History. Works with day-to-day operation and development of the museum's zoological collections and databases, project support and project management.

PERMANENT ACADEMIC STAFF

Torbjørn Ekrem

Professor of Biosystematics, and entomologist with responsibility for the insect collection. Conducts research on biodiversity and evolutionary history of species. Chair of the Norwegian Barcode of Life (NorBOL), a network and national research infrastructure on DNA barcoding.

Kristian Hassel

Associate Professor and head of the herbarium at the Museum. This mainly consists of four work areas: Research, teaching, collection management and dissemination.

Birgitte Skar

Associate Professor and responsible for the Stone Age, Bronze Age and Skeleton Collections. Has expertise in hunter-gatherers, rock technology, ancient DNA (aDNA), cultural heritage management and climate change.

TEMPORARY ACADEMIC STAFF

Malene Østreng Nygård

PhD candidate at the Department of Natural History. Studying plant and conservation genetics focusing on yellow-sedges (*Carex* sect. *Ceratocystis*) and the Siberian aster (*Eurybia sibirica*).

STUDENTS

Henrik Nielsen Solberg

Third-year student in archaeology. Member of the Board of Theodor, the academic and social student organization for archaeology students at NTNU, involved in the Society for the Preservation of Ancient Norwegian Monuments (Fortidsminneforeningen) and an active orienteering

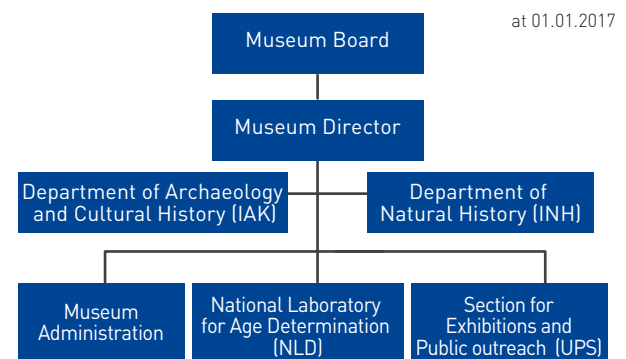
Nathalie Skahjem

First-year student in the Nordic master's programme in Biodiversity and Systematics (NABIS). Writing a master's thesis on the taxonomy of marine molluscs in Norway.

MANAGEMENT TEAM

Reidar Andersen	Museum Director
Solveig Bakken	Research and Collections Manager
Ivar Margido Jensås	Head of Administration
Bernt Rundberget	Head of Department of Archaeology and Cultural History
Torkild Bakken	Head of Department of Natural History
Tove Eivindsen	Head of Communication
Randi Wenche Haugen	Head of Exhibitions and Public Outreach
Christer Torvik	HR Manager

ORGANIZATION CHART



In August 2016, the Board of NTNU decided on a new departmental structure with effect from 01.01.2017. At the Museum's request, the former sections for archaeology and cultural history and for natural history were again established as departments. The Section for Exhibitions and Events changed its name to the Section for Exhibitions and Public Outreach.

II. INTRODUCTION AND MAIN FIGURES

The NTNU University Museum is one of Norway's leading institutions in protection, conservation, accessibility and research on natural and cultural collections. The Museum offers professionally oriented education in archaeology and has extensive heritage management activities in the form of archaeological excavations under the Cultural Heritage Act. The Museum benefits from being part of the Norwegian University of Science and Technology, NTNU. Being a university museum involves ensuring effective integration between research, management, dissemination and outreach.

The Museum is one of six university museums in Norway and as a unit is at the same organizational level as the faculties of NTNU. NTNU reports to the Ministry of Education and Research.

SOCIAL RESPONSIBILITY KEY FIGURES

The NTNU University Museum develops and shares knowledge about nature, culture and science as a basis for sustainable societal development. The Museum aims to conserve and manage its scientific collections and use them actively through research, public outreach and education.

The Museum's exhibitions, collections, museum administration and three of the units are at Kalvskinnet in central Trondheim. The National Laboratories for Age Determination are at Gløshaugen in Trondheim. Ringve Botanical Gardens are at Lade in Trondheim, and the Kongsvoll Alpine Garden is in the Dovre mountains south of Trondheim.

New strategic plan

The museum's strategic plan 2017-2021 "Science at the Centre" is based on NTNU's strategy "Knowledge for a Better World" and aims to support NTNU's three priorities leading up to 2020:

- One unified NTNU
- Contributor to national policy
- Strong, internationally oriented academic environments

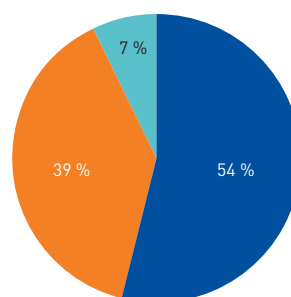
We have also received stronger guiding principles on regional presence from NTNU centrally, which the Museum has incorporated in its plans.

The following areas were given special priority in 2017:

- Outreach – "BODY WORLDS" (see pages 3 and 16)
- One unified NTNU/science centre at Kalvskinnet (see pages 4 and 16)
- Upgrading of storage facilities (see page 10)
- Research sabbaticals/mobility requirements (see page 11)
- Digital presence and knowledge sharing (see pages 17-18)

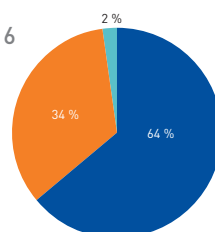
Income distribution:

2017



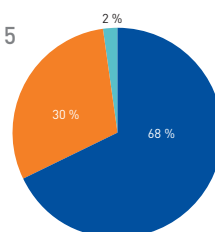
Govt grant NOK 92,456 External income NOK 67,309 Other income NOK 11,165

2016



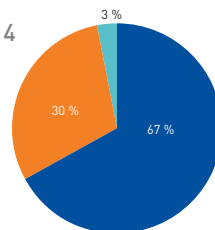
Govt grant NOK 92,178
External income NOK 47,921
Other income NOK 2,850

2015



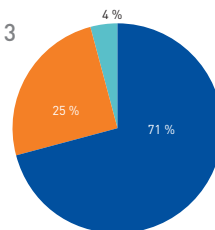
Govt grant NOK 91,889
External income NOK 40,362
Other income NOK 3,339

2014



Govt grant NOK 88,523
External income NOK 39,129
Other income NOK 3,540

2013

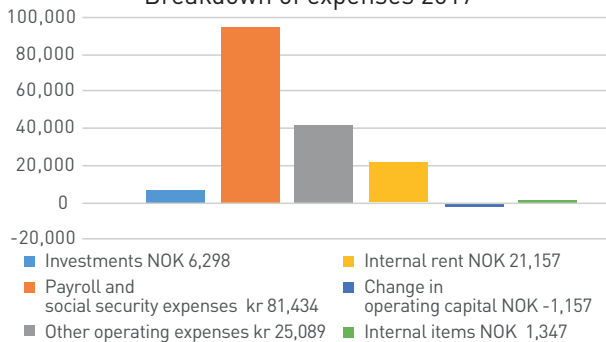


Govt grant NOK 87,399
External income NOK 30,667
Other income NOK 4,668

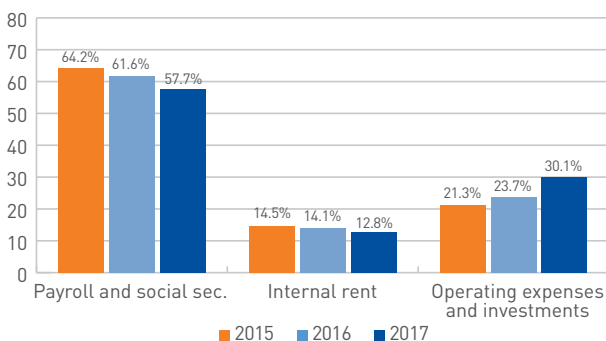
For 2017, the income of NOK 170.9 mill is derived from three sources: the Government grant, external income and other income. The considerable increase in external income from 2016 to 2017 is largely due to ticket sales from BODY WORLDS Vital. This shows that exhibitions offer good earnings opportunities, even though such projects also entail significant expenses.

II. INTRODUCTION AND MAIN FIGURES

Breakdown of expenses 2017

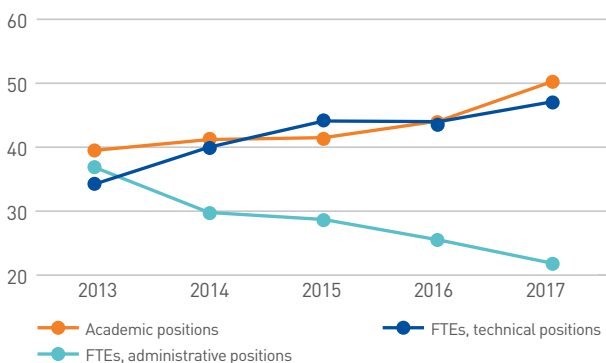


Trend in proportion of three significant costs



Although payroll and internal rent expenses have increased in kroner, their relative percentages are decreasing because the increase in operating and investment costs has been considerably higher. The increase from 2016 is mainly due to higher levels of externally funded activity. In particular, there were cost increases for the purchase of services from contractors for surface stripping and similar in connection with excavation projects. In addition, there were special costs related to the exhibition "BODY WORLDS Vita".

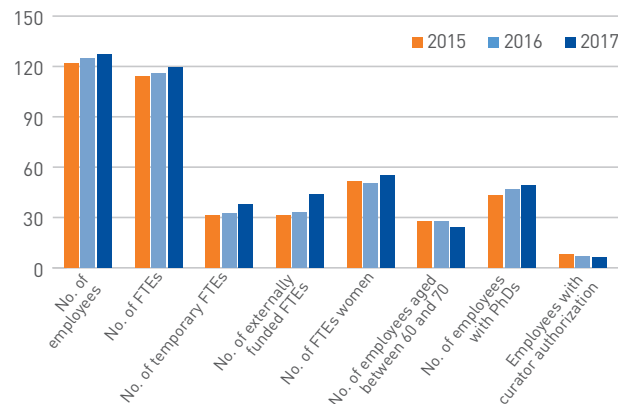
Breakdown of job categories



Excluding hourly employees in fieldwork and assistant positions. Apprentices are included in technical positions.

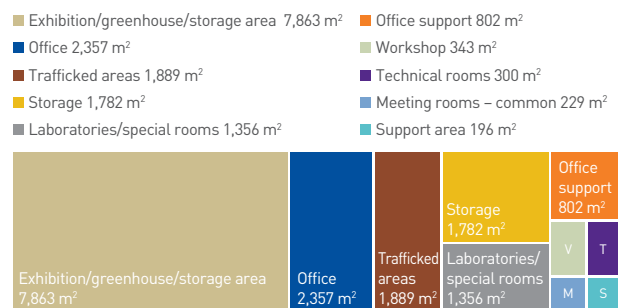
There is still a reduction in the proportion of full-time equivalents in administrative positions and a higher proportion of teaching and research positions, as well as technical positions.

Our people



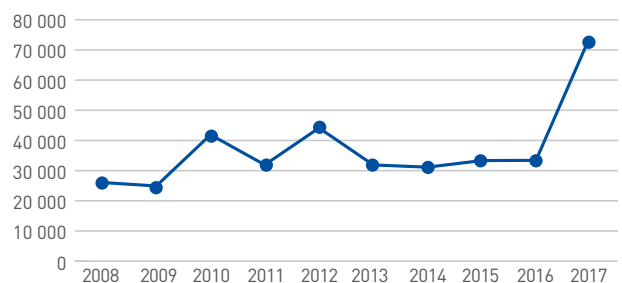
At 37.7%, the proportion of temporary employees may seem high. The main reason for this is that 8 new employees have been appointed in recruitment positions. Hourly employees are not registered in the statistics for full-time equivalent staff at NTNU, but at the Museum, short-term employees represent a substantial personnel resource. In total, 186 employment contracts were signed with 51 employees for 34 contracts in 2017. The number of employees with doctoral expertise is increasing at the Museum. The Museum is appointing more employees with doctoral skills in connection with externally funded activities, and internal skills development in the staff results in more employees with a doctoral degree.

Types of space



83% of the area that the Museum uses is at Kalvskinnet. A full 7,863 m², or 46%, of the area at the Museum's disposal is used for museum-related tasks such as exhibitions, storage facilities and greenhouses for scientific material.

Visits to the exhibitions at Kalvskinnet



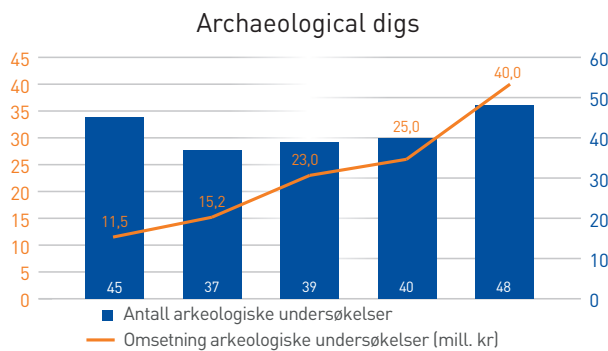
In 2017, visitor numbers at Kalvskinnet (74,536) exceeded both the peak years of 2010, with the anniversary exhibition and free admission, and 2012, with "Afghanistan – Hidden Treasures".

THE UNITS

DEPARTMENT OF ARCHAEOLOGY AND CULTURAL HISTORY

The Department of Archaeology and Cultural History (SAK) conducts research on prehistoric, historic, maritime, and Sámi archaeology. It conducts archaeological excavations in accordance with Norway's Cultural Heritage Act. It hosts the Museum's cultural heritage conservation laboratory, and is responsible for the cultural history collections, as well as teaching the professional archaeology programme.

In 2017: Widespread construction activity in the region has resulted in many archaeological excavation projects. Activity in the conservation of rock art has also increased, with a record appropriation in 2017. Two new research groups were started and the department participated in interdisciplinary initiatives. The interdisciplinary SPARC project on snow patch archaeology was concluded with a seminar.



Revenue for the 48 archaeological surveys in 2017 ended at NOK 40.0 million. The largest project was "E6 Røskaft-Skjerdingstad" in Melhus municipality with a budget of NOK 16.3 million.

DEPARTMENT OF NATURAL HISTORY

The Department of Natural History conducts research in biogeography, biosystematics, and ecology with an emphasis on conservation biology. The Department is responsible for developing and maintaining the Museum's natural history collections, including the botanical gardens.

In 2017: The Department invested in research infrastructure, with upgrading of the clean room laboratory and new sequencing equipment. There is a high level of activity in environmental barcoding and DNA barcoding through the NorBOL project. Interdisciplinary projects with ancient DNA on skeletons from archaeological excavations were launched. A researcher who was awarded a grant from the Research Council of Norway's "Young Research Talents" programme started his project. About 30 species new to science were described by researchers at the department in 2017, and long time series with collection of data on the population dynamics of birds in Lierne ended after 31 years.



Examination of a thrush at the taxidermy workshop.



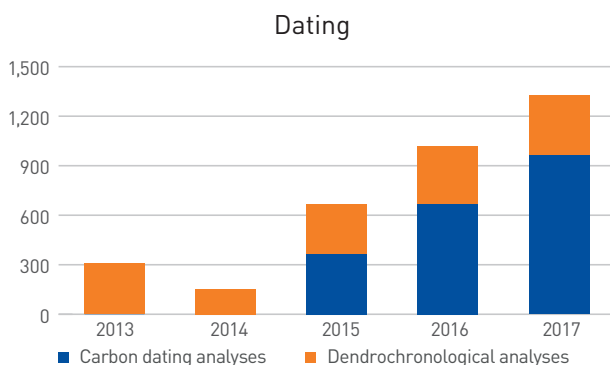
FROSTATTINGET in the light of history

This publication in Norwegian stems from the Frostatting seminar held in Frosta in June 2015. The seminar and the book are results of the large Frostatting project conducted by the municipality of Frosta and the Nord-Trøndelag County Authority in 2014-2015. The book on the Frostatting was published in the Museum's scientific series "Gunneria", as an open access digital journal.

THE NATIONAL LABORATORIES FOR AGE DETERMINATION

The National Laboratories for Age Determination date archaeological, geological and organic material using radiocarbon dating (^{14}C) and dendrochronology dating (tree-ring analysis). The laboratories conduct research on dating methods and their application.

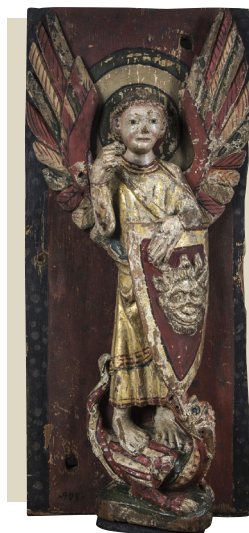
In 2017: The National Laboratories for Age Determination received 1,092 unknown samples for radiocarbon dating and dated 986 of them in 2017, fully achieving the goal for the year. Most samples come from statutory excavation projects in our own district, but the number of research samples is increasing. The laboratory extended its services to include determination of tree species related to radiocarbon dating. The dendrochronology laboratory has dated 360 samples from 7 counties. This activity level is in line with 2016, but significantly higher than the average for the past five years. Implementation of infrastructure related to isotope analyses and preparation for radiocarbon dating was completed.



SECTION FOR EXHIBITIONS AND PUBLIC OUTREACH

The section is responsible for the museum's activities and events for the public, as well as for school programmes and other learning programmes. It is also responsible for the design and maintenance of the Museum's exhibitions.

In 2017: The Museum used substantial resources on the blockbuster "BODY WORLDS Vital". In addition, the Museum had several exhibitions developed in-house. "Layer upon Layer" is an exhibition about plastination that opened in parallel with "BODY WORLDS Vital" and was extended afterwards. "Who Owns the Story?" opened in connection with the Sámi anniversary celebrations Tråante 2017. "Deadly Trade" reopened in an extended version. The test station "Your Body in Motion" linked "BODY WORLDS Vital" to several of NTNU's academic groups.



In the autumn of 2017, the course "Object Lessons" was held for the second time. Students from NTNU's Department of Art and Media Studies have each chosen an object from the Museum's collection of medieval art.

The online exhibition presents two magnificent church textiles: a chasuble that has never been exhibited and a famous embroidery known as the Høyland tapestry. They both give us an exciting glimpse into a textile tradition that is largely lost to us today. The exhibition also shows a small painted sculpture of the archangel Michael and a beautiful altarpiece.

Each student wrote a popular science text for the online exhibition. They also wrote texts with greater academic depth, which will be available in the Museum's visible storage displays.



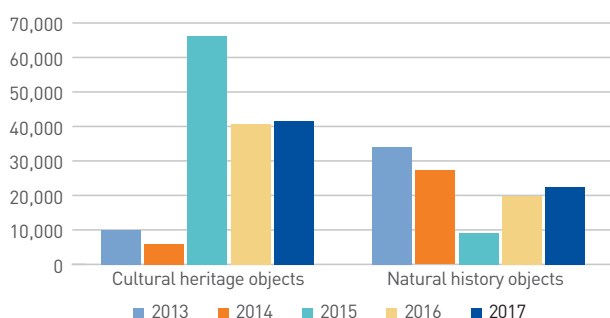
SCIENTIFIC COLLECTIONS

The Museum's strategic objectives are to protect the natural history collections in functional and secure storage facilities, and to use them actively in research, management, teaching and public outreach.

The activity level related to collections has been high, with both local and national projects in addition to extensive operational tasks. The existing storage facilities have been upgraded in cooperation with NTNU's Property Division to increase storage capacity and improve conservation conditions.

High volumes of accessions and loans have reduced our capacity to clear backlogs in digitalization and preservation. The Museum's employees have contributed significantly to the development of a common quality system for collection management at the university museums in Norway.

ANNUAL GROWTH IN OBJECTS



The variation in accessions within cultural history is due to the size of the excavation fields and period, in which Stone Age sites yield most material. For natural history, growth varies with the type of research and mapping projects as well as the capacity to register and organize the material in the collections.

At the end of 2017, the Museum had:

- Archaeological objects: 1,768,335, of which 68.5% is digitalized
- Natural history objects: 1,360,362, of which 94.6% is digitalized

Here, "digitalized" refers to registration in a database with expert description of the objects.

In 2017, the Museum received 387 metal detector finds, compared with 206 in the previous year. Of the finds, 289 were handed in by individuals and 98 from searches organized by the Museum or county administration.

PROTECTION AND CONSERVATION

The Museum's specialist groups handle ongoing protection and conservation of the collections. Large projects are given priority through the Museum's joint action plans. The biggest challenge to the Museum's protection and conservation efforts, in both the short and the long term, is the lack of satisfactory storage facilities for parts of the collections and storage capacity. The establishment of new storage facilities is being planned in conjunction with NTNU's Campus project.

In 2017, the Museum has given priority to structural measures that improve protection and conservation conditions in existing storage facilities and associated workrooms.

The former exhibition of church art was converted into storage facilities for cultural history. The area is now also used as a "storage exhibition", with access for students, researchers and others by appointment.

A substantial infrastructure upgrade has been carried out in the existing storage facilities for the botanical collections. After modernization of the main storage for plants and fungi with improved access, security and climate control, capacity has increased by about 50%.

MODERNIZATION OF STORAGE FACILITIES



The modernized botanical storage facilities will have capacity for new objects for decades to come. We are ready to expand the botanical and mycological collections from the current size, which is about 512,000 objects.

Upgrading the storage facilities

RESEARCH AND KNOWLEDGE DEVELOPMENT

The NTNU University Museum develops and shares knowledge about nature, culture and science as a basis for sustainable societal development.

The Museum's strategic objective is to be an attractive research partner and active producer of knowledge at a high international level.

The Research Council of Norway's evaluation of humanities research in Norway, HUMEVAL, was launched in June 2017, after an extensive effort from some fifty international experts who evaluated the institutions. The Museum's Department of Archaeology and Cultural History is one of the evaluated units. In addition to the experts' evaluation, the work included the unit's own review of its research in terms of organization, scope, quality and impact. As a follow-up of this, two new research groups were established at the Department and interdisciplinary initiatives have been extended.

The research project MedHeal600, supported by the Research Council of Norway, started in 2017. The purpose is to show how health and welfare developed in medieval Trondheim. The project makes active use of the natural history collections through the studies of skeletal material from graveyards around the churches St. Olav's, St. Gregorius and St. Clement in Trondheim.

The "European Mire Book" was published in 2017 by the renowned publisher E.. Schweizerbart and a wide-ranging book on the distinctive character, variation and protection of mires in Europe. 120 contributors from 49 countries are

involved. The Department of Natural History played a vital role in realizing the publication, through both editorial work and financial contributions.

Extensive work was invested in four applications to Horizon 2020, one as coordinator and three partner applications. All the evaluations were very good, but unfortunately none of the projects was funded. The biological research group is involved in three applications for research funding within the EU's network "ERA-NET - BiodivErsA". One project has been approved and began in 2017. Two applications have progressed to stage two and will be evaluated in 2018. The Museum has had a high level of activity aimed at COST (European Cooperation in Science & Technology) Actions in 2017. We are participating with work package responsibility in one action and two applications for new actions were submitted in 2017, in which the archaeological community at the Museum had responsibility for an application on behalf of a scientific network with representatives from 22 countries.

Two employees completed sabbaticals and nine employees had long research visits in 2017.

DEADLY TRADE

The exhibition "Deadly trade - how illegal trade can threaten the existence of species" was reopened in a larger area after "BODY WORLDS Vital". Rhino and elephant poaching is a growing problem, which is why the rhino has a key place in the exhibition. The Convention on International Trade in Endangered Species (CITES) protects 35,000 species. Themes of the exhibition are "CITES", "The Black Market", "Wildlife Crime and Endangered Species", "Wood from the Rainforest" and "International Trade in Plants - it's permitted if you do it right." Hornbills, Apollo butterflies, mongooses and white gyrfalcons are on display. Exhibits include confiscated objects and specimens on loan from the Norwegian Environment Agency, the exhibition partner. The agency and DKNVS have provided funding.



III. ACTIVITIES AND RESULTS FOR THE YEAR

RESEARCH AREA: ARCHAEOLOGY AND ADVANCED TECHNOLOGY

Conservation technology includes protection and conservation of movable and immovable cultural heritage artefacts. Research depends on natural sciences that increase our understanding of materials, structure and degradation, as well as development of evidence-based methods and strategies. Field methods are based on prospecting and strategies for documenting and collecting archaeological data above and below water using GiS, geophysical and other remote sensing methods, photography and field conservation techniques.

In 2017: The TEMAR (TERrestrial, Marine & Aerial Remote sensing for archaeology) group has researched and developed methods in advanced technologies on land and water to study and survey registered visible and invisible cultural heritage in non-destructive ways. National and international collaborative

projects include exploring settlement areas and a necropolis (cemetery) in the pre-Islamic city of Mleiha in the emirate of Sharjah.

RESEARCH AREA: DATING METHODS AND DEVELOPMENT OF CHRONOLOGIES

Dating and chronological sequencing of events provide a basis for conclusions in both research and heritage management. In research, dating of finds is important in archaeology, geology and biology. In heritage management, precise dating provides important support for decisions based on the Cultural Heritage Act.

In 2017: Results from research projects in progress were presented at 8 international conferences as well as several national seminars and guest lectures. The national laboratory had fewer scientific publications and outreach contributions in 2017 than in 2016, which was a peak year. However, the activity is at the same level as the average for the museum as a whole.

MedHeal

The research project MedHeal600, supported by the Research Council of Norway, started in 2017. The purpose is to investigate how health and welfare developed in medieval Trondheim. The project is exploring how climatic, physical and ecological conditions in and around the city in 1000-1600 affected the general health situation, and may thus have helped to change the idea of health from a personal issue to a public concern. The empirical starting point for the studies is skeleton material from 97 individuals from the burial sites around the churches of St. Olavs, St. Gregorius and St. Clement in Trondheim.



Skeletons from the crypt of Nidaros cathedral and skeletal material from the Museum were transported to Stavanger for analysis late in 2017.

RESEARCH AREA: INTERACTIONS BETWEEN HUMANS AND NATURE

Research on the interaction between humans and their natural environment is a key to understanding human impact on the natural environment over thousands of years, and how changes in nature have shaped human life and society. Knowledge of this interaction forms the basis for sustainable use and conservation of natural and cultural environments. We want to understand how human activity influences and is influenced by nature, and how use of the cultural and natural environment can safeguard biological diversity as well as the natural and cultural benefits that different landscapes and cultural environments provide.

In 2017: The project "Marine Ventures" continued its research comparing cultural development in two similar archipelago coasts in Scandinavia and Patagonia (Chile and Argentina). The collaborative research project SPARC, focused on the archaeology of ice and the effects of climate change on vulnerable alpine heritage environments, ended in 2017.

The Museum is playing an active role in the strategic area "NTNU Sustainability", where methods from different disciplines are used to find answers to how and why nature is changing. The Museum's researchers are continuing their work under the auspices of IPBES, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. NTNU's strategic area "Sustainability" has developed a new strategy in which the Museum is key player and has increasing activity. Collaborative projects using evolutionary models of the impact on species and nature are a new area for research.

SNOW PATCH FINDS – A RACE AGAINST TIME

The Museum has a rich collection of snow patch finds, more than half of which have come to the museum during the past 15 years. The low temperatures in snow patches provide excellent conditions for preserving organic remains. The accelerating rate of melt is a major challenge for future preservation of the snow patch “archives”. The interdisciplinary SPARC project has studied the factors linking the archaeological and natural history material with the natural system of the ice, proving that snow patches have been cultural environments for reindeer hunting for at least 5,000 years. The project has had funding from the Research Council of Norway and close cooperation with the Norwegian Nature Inspectorate.



An extremely well-preserved redwing, 4,200 years old, was found by the Norwegian Nature Inspectorate at the edge of a snow patch in the Oppdal mountains in the summer of 2017.

RESEARCH AREA: MATERIAL CULTURE AND OTHER FORMS OF CULTURE IN A LONG-TERM PERSPECTIVE

Research on movable and immovable cultural heritage and forms of culture through long periods and eras as they are expressed through material culture and their landscape context, continuity, change and variation in a Norwegian, European and global setting. The research is multi-faceted and includes empirical and theoretical perspectives.

In 2017: The “Organizing Landscapes” group has researched how landscapes were perceived, constructed and organized in the Iron Age and the Middle Ages. The MedHeal project has described and analysed how health and welfare developed in medieval Trondheim, and how climatic, physical and ecological conditions may have influenced the general health situation. Research has also been conducted on prehistoric periods when stone was used in the “Squeezing Blood from Stones and Bones” project.

RESEARCH AREA: TAXONOMY, SYSTEMATIC AND EVOLUTIONARY HISTORY

Biosystematics is the study of the diversification of organisms, through the description of biological diversity and the understanding of the processes that lead to evolutionary changes. This includes naming species, deducing the relationship between different organisms, understanding how species are formed, and analysing the history of all living organisms on earth.

In 2017: The Museum is involved in seven “Species Projects” encompassing mapping projects or networking to

ensure long-term development of species knowledge in Norway.

Work on DNA barcodes continued as planned in 2017. Identifying species with DNA barcodes requires a library of the barcodes for known species. The library is being built through the world’s largest international biodiversity project. The Museum was well represented during the 7th international conference for DNA barcoding, and was chosen as the host for the 8th international conference in 2019.

RESEARCH AREA: ECOLOGICAL PROCESSES AND SPECIES DISTRIBUTION

Nature is changing dramatically because important driving forces such as land use and the climate are changing. We want to understand the factors that determine species distribution in time and space, how environmental variations influence the structure and dynamics of various populations, communities and habitats, and how to preserve biodiversity and ecosystem services at all levels.

In 2017: Increasing resources are being committed to studies of the “secret life” of the sea trout, in part through the project CHASES, funded by the Research Council of Norway. Impacts on ecosystems and implications for management of invasive fish species and their dispersal are being explored through the INVAFISH project funded by the Research Council of Norway. Studies of land-use changes resulting from pastures and various projects related to mires have had high activity.

III. ACTIVITIES AND RESULTS FOR THE YEAR

CONTINUED POSITIVE DEVELOPMENT IN SCIENTIFIC PUBLISHING AND INTERNATIONAL COLLABORATION

The Museum regards international cooperation on publishing as a strategic commitment.

The Museum’s scientific publishing in 2017 was at the same level as in 2016 in terms of total publications and the proportion of publications at level 2. This is considerably higher than the average for the last five years.

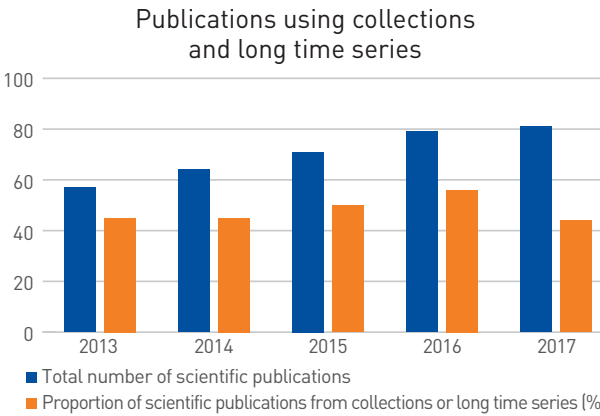
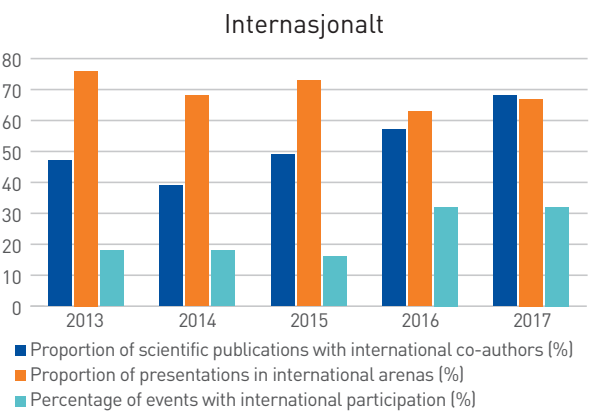
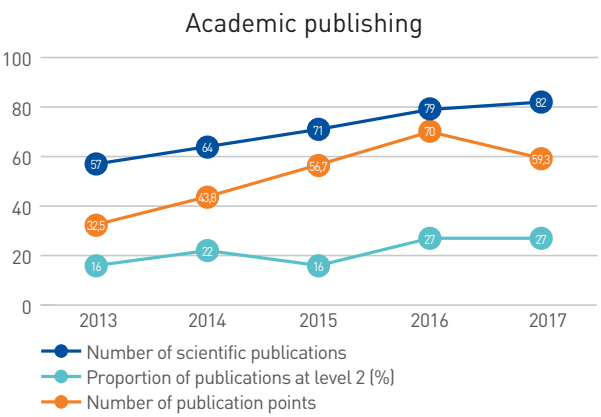
In terms of the total number of publishing points, this is a reduction from 2016, but higher than the average for the last five years. In 2017, the number of publication points per full-time equivalent academic position (UFF) was 1.24, while it was 1.64 and 1.55 in 2016 and 2015 respectively. The reduction in 2017 is due both to more UFF FTEs (PhD candidates in the start-up phase) and fewer publication points than in 2016.

In line with the Museum’s strategy, the proportion of scientific publications with international co-authors is increasing, amounting to 68% in 2017.

The Museum awards incentive funds to its departments and sections based on the units’ scientific publishing and outreach. In recent years, the total provision for incentive funds has been NOK 750,000.

International activity as a whole continues to increase, with a particularly high level of activity for applications aimed at EU programmes in 2017 and good international participation in the Museum’s own events.

A long-term goal for the Museum has been to have a high proportion of our scientific publications based on collections or long time series. After we reached the target of at least 50% in both 2015 and 2016, the result for 2017 was considerably weaker. It is difficult to identify a clear reason for this. It may relate to the composition of the project portfolio that forms the basis for publishing, or the absence of major book volumes in 2017 in which the collections have played a key role. We must monitor this for the next few years to conclude whether this is a new trend.



During the Starmus Festival, the museum held the seminar “Biodiversity and Humanity” with 150 participants, in cooperation with the Norwegian Biodiversity Information Centre.

III. ACTIVITIES AND RESULTS FOR THE YEAR

RESEARCH PROJECTS PARTIALLY FUNDED BY THE RESEARCH COUNCIL OF NORWAY, THE EUROPEAN UNION OR THE EUROPEAN ECONOMIC AREA

Programme in brackets.

NTNU UNIVERSITY MUSEUM AS LEADER OR COORDINATOR FOR, AND CONTACTS:

NorBOL	Norwegian Barcode of Life (FORINFRA)	Torbjørn Ekrem
SPARC	Snow Patch Archaeology Research Cooperation - The effects of climate change on vulnerable high mountain heritage environments (Miljø2015)	Birgitte Skar
INVAFISH	Invasive freshwater fishes, dispersal vectors, impacts and management (Miljø2015)	Anders G. Finstad
EBAI	Environmental Barcoding of Aquatic Invertebrates (Miljø2015)	Torbjørn Ekrem
CHASES	Consequences of land-use change and human activity (MILJØFORSK)	Jan Grimsrud Davidsen
	Speciation genomics of peat mosses (SPAGHNUM) - testing speciation-with-gene-flow hypotheses in a highly diverse genus (FRIMEDBIO)	Kristian Hassel
	Your Body in Motion (PROFORSK)	Morten Sylvester
DISENTANGLE	Disentangling the impacts of herbivory and climate on ecological dynamics (FRIMEDBIO)	James Speed
MEDHEAL	Medieval urban Health: From individual to public responsibility AD 1000-1600 (FRIHUMSAM)	Axel Christophersen

PROJECTS IN WHICH THE MUSEUM PARTICIPATES:

ForBio	The Research School in Biosystematics - towards permanent existence (UNI-MUSEER)	Hans K. Stenøien
SFF AMOS	Centre for Autonomous Marine Operations and Systems (SFF)	Øyvind Ødegård
SFF CBD	Centre for Biodiversity Dynamics (SFF)	Hans K. Stenøien
ClimJaM	Climate and glacier variations since the Last Glacier Maximum in Jan Mayen (KLIMAFORSK)	Jan Grimsrud Davidsen
ODYSSEUS	Between Scylla and Charybdis - managing connectivity for freshwater fish (ERA-NET)	Anders G. Finstad

MOON ROCKS displayed at the Stormus Festival

During the Stormus festival, the Museum organized perhaps its shortest exhibition ever: Our moon rocks from Apollo 11 were displayed in Nidaros Spektrum for one hour. This was long enough for hundreds of festival participants to see the pop-up exhibition. The moon rocks, with a greeting to the people of Norway from US President Richard Nixon, are part of the Museum's geological collection and are not usually on display.



EXHIBITIONS AND PUBLIC OUTREACH

The Museum aims to offer attractive exhibits and spaces for the public and research to meet, with Kalvskinnet as the hub and with a presence in the regions.

According to the statistics on 109 Norwegian museums published by Arts Council Norway, the Museum ranks as No. 17 in terms of visitor numbers (2016). With 2.8 visits per capita every year, Sør-Trøndelag is above the national average of 2.1.

VISITORS

The total number of visitors to all the Museum’s exhibitions and events increased by 47,730, mainly due to “BODY WORLDS Vital”. Visitor numbers for Kalvskinnet (74,536) thus exceeded the figures from 2012 (44,145), when the Afghanistan exhibition increased the number of visits, and represent a large increase from 2016 (33,413). The number of educational events includes 60 school visits to the Newton Room.

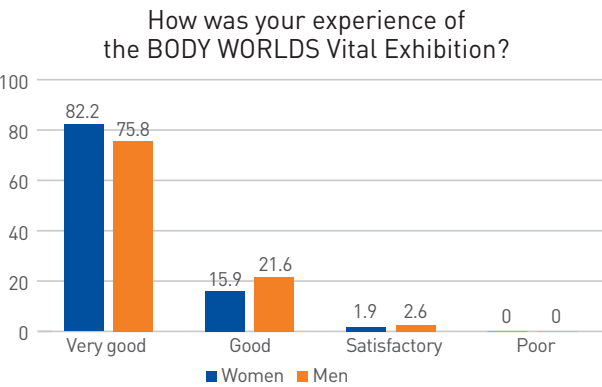
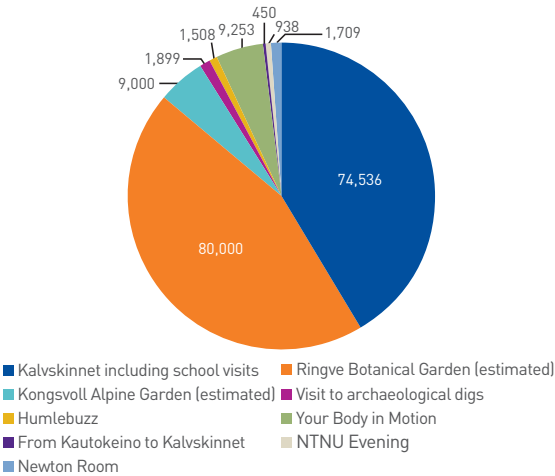
«BODY WORLDS Vital» put 13 plastinates of the human body on show. The exhibition was sold out for several periods, including the last week. The proportion of children under five years old was low, as this was not a typical family exhibition.

«Humlebuzz» is a mobile educational exhibition with living bumblebees. It links local communities, endangered habitats and red-listed species to the context of natural diversity, insects and food production. In 2017, “Humlebuzz” visited 34 schools with 1,008 students in 4th and 5th grade in Nord-Trøndelag

Key performance indicators common to all museums	Result 2017	Goal 2017	Goal 2018
Number of visitors	177,584	150,000	125,000
Number of educational programmes for schoolchildren	548	600	490
Total guided tours	554	600	550
Number of exhibitions (permanent and temporary)	13	11	11
Percentage of exhibitions and events with an interdisciplinary theme (%)	48	45	45

In 2017, the Museum had 548 educational activities for school classes, including the “Newton Room”, which is also included in the visitor numbers. The target for visitor numbers in 2018 is lower than the result in 2017, because no major exhibitions are planned for the year.

Visitor numbers totalled 177,584 in 2017



685 respondents answered the visitor survey on their experience of the exhibition.

BODY WORLDS Vital was advertised on Facebook, Instagram, YouTube and Google search, resulting in nearly 1 million views. Over 145,000 people saw the advertisements on Facebook and Instagram, where posts also sparked strong engagement.

The Museum aims to be a leading and innovative national centre for knowledge sharing, clearly visible in the public debate.

The Museum will share both results and the processes behind its research and collection activities. In 2017, the Museum had about 2,000 objects out on loan.

DIGITALIZATION – DIGITAL SHARING

The museum aims to be a beacon and an innovative national environment for digital knowledge sharing and a leader in open access publishing. The Internet portal “Collections Online” with the first English-language access to our databases of archaeological objects was launched in 2017. The portal will be developed further in 2018.

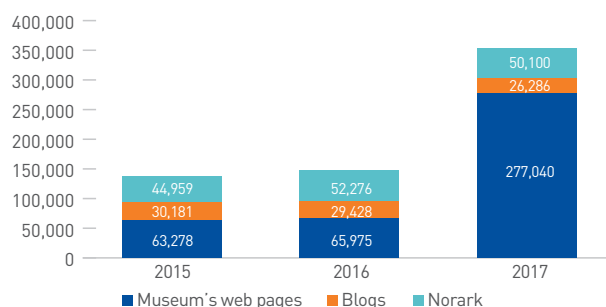
The museum is in the forefront in digitalization and accessibility of the scientific collections. 95% of the biological collections have been digitalized, with open national and international access to the data nationally and internationally. The entire collection of vascular plants with more than 250,000 specimens has been scanned, so that they are digitally available with photos.

The Museum manages the website Norark.no on behalf of several Norwegian university museums. Norark communicates knowledge about archaeological methods, results and research in Norway.

The Museum’s scientific series of papers “Gunneria” has been relaunched as a digital journal with open access. The institution’s natural history and archaeological report series are continuously published online for free use, and the popular journal “SPOR” has been made available online from and including the first editions in 1986.

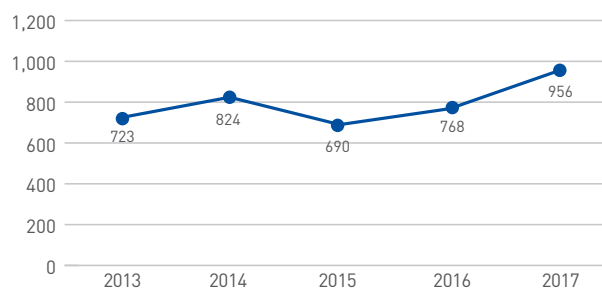
Online availability was significantly higher than the 2017 target for the natural history collections, while it was lower for the cultural heritage collections as a whole. The reason is that a large increase in material from excavation projects in 2017 was recorded in the collections database, but the data were not ready for online publication at the year-end.

Online visits in 2017



Of 448,567 page views in total in 2017, the start page for BODY WORLDS Vital accounted for 159,132. This explains much of the increase, including the related pages.

Number of media reports in Norway, last five years



Manual registration of media coverage related to BODY WORLDS Vital shows that just over 100 reports were about the exhibition. This is a gratifying increase but does not match the record year of 2012, when the Afghanistan exhibition contributed to a total of 1064 media reports.

LAYER BY LAYER

Today’s preparation techniques make it possible to show what is hidden under feathers, hair and skin. The exhibition “Layer by Layer” shows a wolverine, rat, sparrowhawk, goshawk and tawny owl.

The Department group for anatomy, pathology and forensic medicine at the NTNU Faculty of Medicine and Health Sciences and the Department of Natural History at the Museum have worked in close teamwork to prepare the specimens for this exhibition.

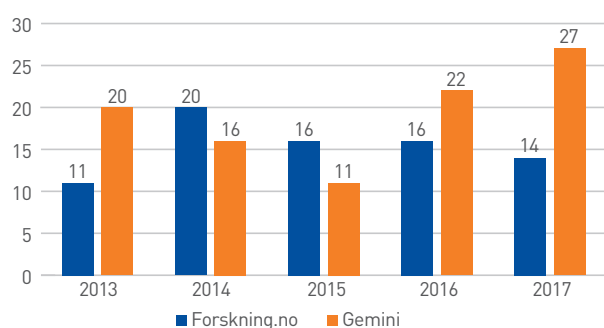


BRONZE AGE FINDS – archaeological dig revealed 3,000-year-old graves

In connection with the development of the new E6 road from Melhus to Ulsberg, the Museum conducted archaeological surveys at Sandbrauta in Melhus in the autumn of 2017. The surveys revealed 3,000-year-old graves from the Bronze Age. Traces left by bronze casting in the form of a kiln and a soapstone casting mould were found in the same area. The findings lay hidden under up to two metres of clay from a landslide. The clay is from a mudslide that probably took place during the Bronze Age.

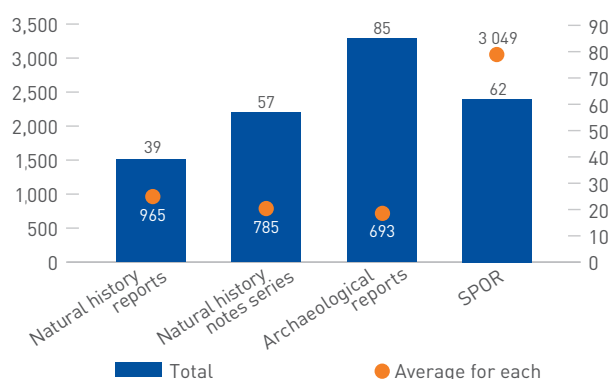


Forskning.no and Gemini.no publications



The 14 forskning.no articles in 2017 include a blog post resulting from the teamwork between Norark and forskning.no on the blog "Arkeologer på nett" ("Archaeologists Online").

Number of published and average downloads

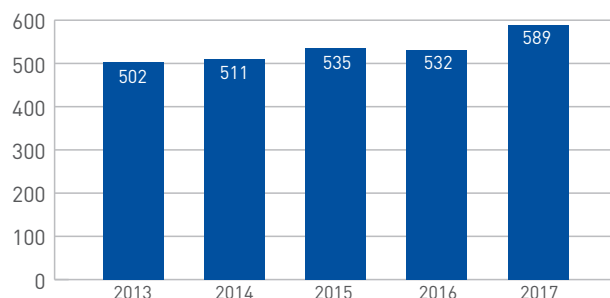


On average, each report is read almost 800 times and SPOR publications more than 3,000 times. Publications are often read a long time after publication, so readership figures increase over time.

STORE NORSKE LEKSIKON

The Museum had four active expert consultants in the Norwegian online encyclopedia "Store norske leksikon" in 2017. This is one more than in 2016. All are from the Department of Natural History. Together they have responsibility for 300 articles, which have been read 147,106 times in the encyclopedia.

Total public and user-oriented outreach



The number of the Museum's registered outreach activities aimed at the public and users is highly stable, but the profile is changing. There are more digital contributions, such as blog posts and reports published online.

The Museum aims to offer attractive courses that educate well-qualified graduates in research, management and museum tasks.

The museum is responsible for study programmes in archaeology and participates with courses specified in the programme description in biology. Many field courses are organized in both biology and archaeology. A total of 12 master's students have a workplace at the Museum, where they are well integrated in the research groups.

Employees have put a lot of effort into many courses and activities, which benefits PhD candidates and master's degree students in particular. In 2017, two of the Museum's PhD candidates defended their theses

Reduced dropout of students

The archaeology programme has completed the implementation of the new programme description. One of the main objectives was to reduce student dropout at bachelor's degree level. It is still too early to tell with certainty, but the figures from 2017 show great improvement.

In the autumn of both 2016 and 2017, more than 40 students were admitted to the bachelor's programme in archaeology. Of the first-year bachelor's degree students in 2016, 23 continued their studies in the second semester. In 2017, a full 37 students continued to the second semester. In the second academic year, the field course in 2017 had only 12 bachelor's degree students. The corresponding figure for the spring of 2018 is 26 students.

FIELD TRIP TO IRELAND

Since it started in 1994, the master's degree programme in archaeology has had a field trip. The aim has been to put Norwegian archaeology in a broad perspective: dissemination and outreach, cultural heritage management and legislation, museology, and the place of archaeology for citizens and visitors. The field trip consists of a number of museum visits as well as day excursions led by Irish archaeologists. Besides being academically important, the field trip creates unity in the student group and promotes learning of the discipline.



THE BYMARKA WOLVERINE

November saw the opening of a foyer exhibition on the "waffle wolverine". The wolverine originally lived in Hedmark, where she and her litter were designated to be culled in their den, to reduce the level of conflict with sheep farmers. The cubs were culled, but the mother escaped to an isolated existence in Bymarka in Trondheim. She lived

there together with sheep, with no registered loss of sheep. The wolverine received food and waffles from the cabins in the area, especially Elgsethytta, something which explains her nickname.



In 2017, the wolverine was observed in an emaciated condition and was put to death in August. The autopsy showed that the wolverine was almost blind and had a large tumour. Dental analysis indicated that the wolverine was at least 20 years old, and thus the oldest that we know of in Norway.

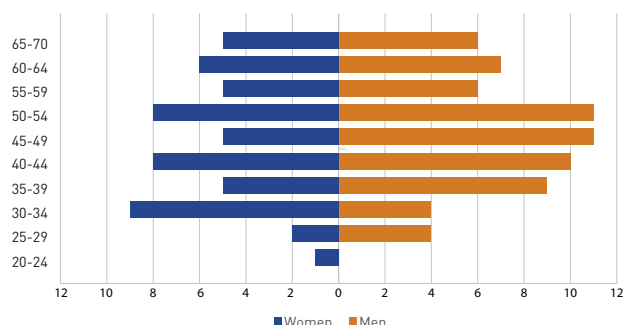


The Museum aims to be an attractive and professionally stimulating place to work, with expertise, financing and infrastructure that ensure an effective institution.

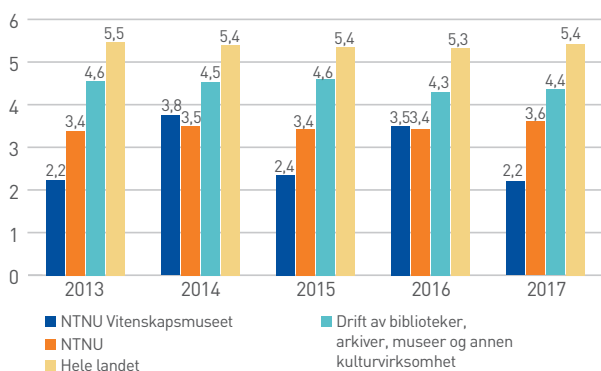
The Museum had 119.3 full-time equivalent staff (FTEs) in 2017. From 2016 to 2017, the number of academic FTEs increased from 44.5 to 50.4 and technical FTEs from 44.0 to 47.2, while the number of administrative FTEs decreased from 25.5 to 21.8. One of our employees was granted personal promotion to professor.

During 2017, 8 new staff members were appointed in recruitment positions, which is the main reason that we are increasing our proportion of temporary FTEs from 30.7 to 37.7. In 2017 we have 15.8 FTEs in the recruitment positions category.

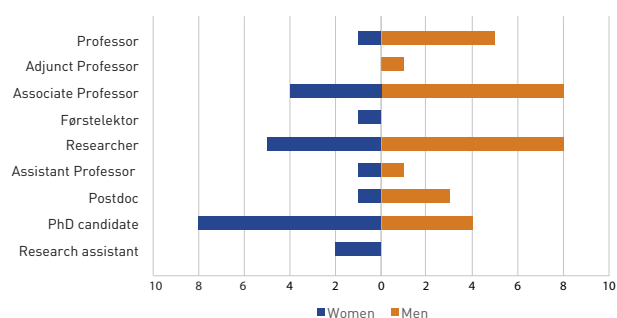
Age and gender distribution



Sickness absence with medical certificate - Own activities compared with others



Scientific positions – gender distribution



The figure shows all age groups, average per year, both sexes. Lost working days in %.

The Museum has low medically certified sickness absence compared with NTNU, the museum sector and the country.

Work environment survey

NTNU conducts regular work environment surveys to map the psychosocial work environment. The survey was conducted in November 2017. The results were presented to the units, and measures will be developed in 2018. The overall features indicate that employees at the Museum experience the same challenges as at other institutions in the university and university college sector, where time pressure and work-life balance are highlighted as challenging. In general, the various units have positive results, indicating that the work environment at the Museum is largely characterized by enthusiastic and dedicated employees with good relationships with their colleagues.



IV. MANAGEMENT AND CONTROL OF OPERATIONS

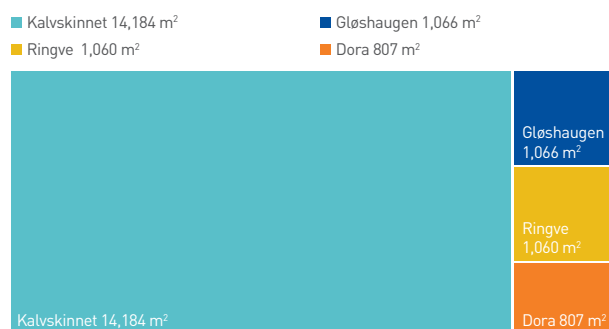
In 2017, the Museum has the use of building areas totalling 17,117 m² compared with 16,798 m² in 2016. The museum has increased the exhibition area at Kalvskinnet by 638 m², while the office support area was reduced by 426 m².

The main reason for the change is that the Newton Room, a collaboration between the Vitensenteret science centre, the municipality of Trondheim and Museum, has been moved from the 1st floor of the Gunnerushuset building and these areas have been used for exhibitions. The Newton room has been moved to Gunnerusgata 1, "Akrinn". The Café Magasinet in Suhmhuset has been closed, and the area is being used for exhibition space. This helps to reduce the office support area, as the café area was defined, by 426 m². The Museum's Department of Archaeology and Cultural History has moved out of rented premises in "Vaskeribygget" at Kalvskinnet and moved staff and functions to its own premises at Gunnerushuset. Together with other changes, this has helped to reduce the office space at the museum by about 180 m².

Of the area at the Museum's disposal, 15,742 m² (92.0%) is owned by NTNU, while 1,375 m² (8.0%) is in rented buildings.

At Kalvskinnet, the area at the museum's disposal constitutes primarily older buildings, some of which are completely

or partially listed. The Museum's academic activities and administration are located in several buildings at Kalvskinnet, Ringve and Gløshaugen, which generates high running costs. The building stock does not afford efficient utilization of the space.



TRÅANTE AND THE FRØYNINGSFJELL DRUM

The exhibition "Who Owns the Story" shows unique South Sámi artefacts that have not previously been on display in Trøndelag. It presents some of the most recent results from the Museum's research related to Southern Sámi areas.

The exhibition was developed in cooperation with the Saemien Sijte South Sámi museum and cultural centre, the Røros Museum and the Lesja department of the Gudbrandsdalsmusea museum.

The Frøyningsfjell drum is one of the best documented Sámi drums in existence, and is believed to date back to the 17th century. The drum belongs to the musical instrument collection in the Meininger Museum in Thuringia in Germany, and was loaned to the exhibition for a few months in 2017.



IV. MANAGEMENT AND CONTROL OF OPERATIONS

Self-assessment of internal control was repeated in 2017. This showed that the risk of significant errors is low. The situation is relatively stable, with some improvement. Awareness among staff is growing.

The Museum follows NTNU's organization and procedures related to internal control.

Work is continuing on measures following the risk and vulnerability assessment (RVA) in 2014. Some risks cannot be removed before new storage facilities are in place. A new RVA analysis will be performed in 2018.

For rescue teams and emergency response exercises, the Museum works together with the rest of NTNU.

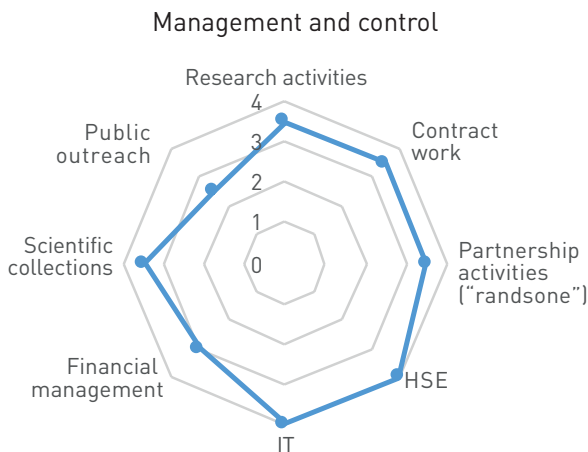
Overall assessment of internal control at the Museum

The Museum still does not have an approach to risk management and internal control that could be described

as well integrated. The Museum carries out several internal control measures and increasingly uses risk assessments, but there are some variations between the different areas, as shown in the figure "Management and Control". Some risk assessments and control measures are carried out today, but a little too often there are shortcomings in documentation following the risk assessments, control and follow-up measures that have been implemented.

The Museum has performed an overall self-assessment of its internal control and risk management. The assessment uses a tool in which internal control and risk management are assessed from level 1 to level 5. Level 1 is described as unreliable and reflects internal control characterized by "firefighting". Internal control and risk management are fragmented. Level 5 is described as optimal and represents a "quality culture". Internal control and risk management are in line with international best practices.

Most of the Museum's areas range between level 3 and level 4. The keyword at level 3 is "formalized" and represents internal control with strong acceptance among managers. The keyword at level 4 is "systematic" and the culture is characterized by continuous learning and improvement. Internal control is regarded as best in the IT and health, safety and the environment (HSE) area, where goal-oriented work on internal control and risk management has taken place for several years. The greatest change has taken place in public outreach, where a dedicated working group has worked with procedures, internal control and risk management, and how the Museum should resolve these in exhibition projects. The work was only completed in 2018, and it remains to be tried out in practice. The self-assessment is therefore scored as 2.5 for 2017.



NEW MARINE SPECIES

Sea slugs (nudibranchs) are colourful and are found along the entire Norwegian coast. For many years, the Museum has played a key role in research on diversity and knowledge of the more than 100 species we have in Norway. The diversity is greater than we had thought, and recently five species from the Norwegian coast were described as new to science. Cooperation with enthusiastic divers and underwater photographers in the international forefront has been important. This is citizen science placed in a system to promote knowledge and create engagement.

En av de nye artene har fått navnet *Fjordia chriskaugei* og er vanlig å finne i tareskogen.



THE IMPORTANCE OF KNOWLEDGE, QUALITY AND EXPERTISE IS INCREASING

Four issues will be especially important for the Museum up to 2025: the challenging storage situation, more intense competition, expectations of strengthened interaction with society, and building a stronger culture of change.

Challenging storage situation

For several years, the Museum has faced challenges in terms of both capacity and quality of its storage facilities for the scientific collections. The Government has decided that improvements must take place through NTNU's campus project. In the short term, it is highly challenging to meet the legal requirements for prudent management of the scientific collections. In the longer term, the challenge for NTNU and the Museum is to establish adequate storage facilities that also improve access for the public and researchers, "visible storage".

More intense competition

The Museum will experience more intense competition in the time ahead, in terms of both recruitment and funding.

In addition, competition will become increasingly global for the Museum. Our departments must develop outstanding research environments in the areas where the Museum has expertise and special qualifications. Our financial situation will be marked by increased competition for resources and greater requirements for external funding. We must be able to tackle this.

Expectations of strengthened interaction with society

For generations, the museum has been an important knowledge provider for local and regional government, and thus a policy contributor for sustainable social development. The Museum also has a significant role in outreach, as one of Norway's best visited museums. This must be continued. There are high expectations for visibility of the Museum's employees and collections throughout the regions as well as in Trondheim. We also experience increased societal expectations that researchers will participate in public debate. The Museum will deal with the challenges it faces as a key player in NTNU's goal of increased public outreach and visibility, and the expectation that the Museum will have an active presence in the regions.

Build a stronger culture of change

We will need to work harder to assert ourselves in the competition for the best people and the best partners. We must continue to develop and professionalize our activities and focus more purposefully on expertise that can secure international research funding for us. The Museum must make the most of the bright minds we have in the organization to build quality for the future through participation and teamwork. At the same time, we will remain in the forefront of digital sharing. The Museum must meet the expectations of a creative working environment to provide for professional development, making the Museum an attractive workplace for all its employee groups.



For "BODY WORLDS Vital", the Museum's regular exhibitions had to be dismantled temporarily. Here is the bull elk from "The Ark" in transit during the preparations for the large travelling exhibition.



RESULT FOR THE YEAR

The surplus for the year was NOK 6.26 million, compared with a budgeted loss of NOK 0.67 million. The main reason for this is a larger surplus than expected from the exhibition "BODY WORLDS Vital" and higher income from externally funded activities than budgeted.

Complete financial statements with the income statement, balance sheet notes and cash flow statement are not prepared at unit level at NTNU. Full separate financial statements are therefore not available for the Museum. A simplified statement of income for 2017 for the Museum has been prepared and is presented in this section with comments and notes.



Further information on NTNU's income statement and balance sheet can be found at:

bit.ly/ntnu2017-18

LIFE AFTER ROTENONE TREATMENT

The Museum has surveyed biodiversity in lakes and tributary streams in connection with rotenone treatment in Bymarka in Trondheim. Samples taken nine months after treatment indicate great variation in the impact of rotenone on different species. Amphibians and European crayfish had tolerated the treatment well, while the impact on some zooplankton and benthic species was extremely negative.



European crayfish in Kyvatnet in June 2017, nine months after rotenone treatment.

DIRECTOR'S COMMENTS

The financial statements have been prepared in accordance with government accounting standards. In the opinion of the Museum Director, the accounting result for the year of NOK 6.26 million provides a true picture of the net income for 2017 and the financial situation at 31.12.2017.

Revenue in 2017 amounted to about NOK 170.9 million. This is an increase of NOK 28 million, or just over 19.6% from last year. This increase is mainly due to income from externally funded operations. Externally funded revenue increased by 40.5% from the previous year. The main reason was a particularly high level of activity within public administration (statutory archaeological surveys), but all categories of externally funded activity increased.

Other income also showed a considerable increase, with ticket sales of NOK 8.3 million from the exhibition "BODY WORLDS Vital".

Expenses in 2017 amounted to NOK 164.7 million. They increased by NOK 18.2 million or about 12.4%, in relation to 2016. This was primarily due to an increase in operating expenses in 2017 (31.7%). More goods and services were purchased both in the appropriation accounts and in the externally-funded accounts in 2017.

The income statement for 2017 shows total net income of NOK 6.26 million. This comprises NOK 5.1 million from the Museum's ordinary operating appropriation, also called the allocation for operations (RD) and an increase in earned capital reserves of NOK 1.16 million.

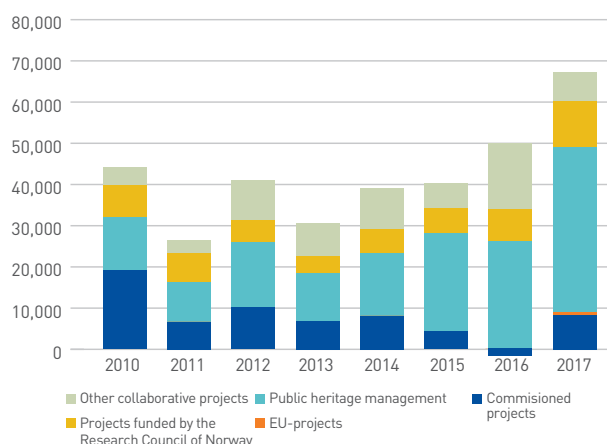
Strategy and restructuring funds (RSO) showed a break-even result in 2017.

The surplus in the operating appropriation in 2017 can be attributed to higher income than expected from externally funded activity and a surprisingly high surplus from the exhibition "Body WORLDS Vital". In 2017, the Museum Director implemented extraordinary measures to increase academic activity and to encourage procurement of necessary equipment that could help reduce the transfers in the accounts. However, the provisions in the Museum's operating accounts were still almost 15%, while at the beginning of the year they were 6.3%.

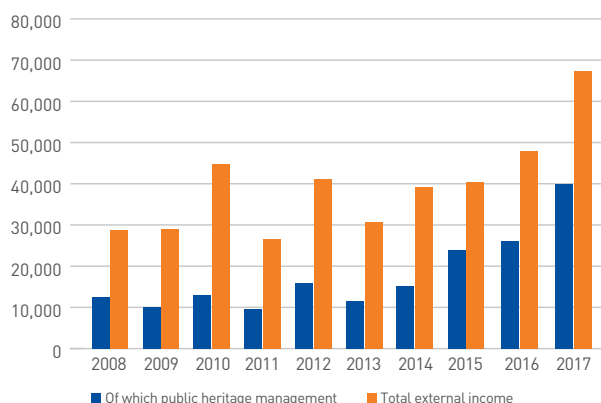
The net contribution per krone in turnover from externally funded operations to the appropriation finances showed a slight reduction from 43.8% to 43.5%. A net refund of NOK 26.1 million was budgeted from the externally funded operations to the appropriation accounts, whereas the result came to NOK 29.1 million.

One challenge for the Museum is the fluctuations in externally funded revenues from year to year. This applies not least

Distribution, turnover
of externally funded activities



External funding fluctuates considerably, in line with
public heritage management, which is cyclical



to the revenues from public heritage management, which constitute a substantial volume of the Museum's externally funded operations. Heritage management is determined by business cycles, and the Museum has little opportunity to influence its scope.

Targeted efforts to generate positive attention in international research forums and higher public attractiveness will further

strengthen the Museum's strategic and economic ability to manoeuvre.

In the coming years, the primary financial challenge for the Museum will be to realize predictable and stable growth of income from the externally funded operations where the contribution margin for each "sold krone" is sustained or, preferably, increased.


Museum Director Reidar Andersen

Results, figures in NOK 1,000	2013	2014	2015	2016	2017
Income distribution:					
NTNU appropriation (note 1)	87,399	88,523	91,899	92,178	92,456
External funding* (note 2)	30,677	39,129	40,362	47,921	67,309
Other income (note 3)	4,668	3,540	3,339	2,850	11,165
Total income	122,744	131,192	135,600	142,949	170,930
Cost allocations:					
Investments (note 4)	3,093	1,503	5,143	2,676	6,298
Payroll and social security costs (note 5)	80,522	81,434	89,038	90,153	95,021
Other operating expenses (note 6)	28,200	25,089	24,081	31,897	42,005
Change in earned capital reserves (note 7)	-1,608	99	35	910	-1,157
Internal rent (note 8)	19,478	19,482	20,133	20,640	21,157
Internal items (note 9)	178	937	268	171	1,347
Total expenses	129,721	129,863	138,698	146,447	164,671
Surplus for the year	-7,119	2,648	-3,098	-3,498	6,259
Transfers (note 10)			9,079	6,490	11,592

* excluding relayed funding ("gjennomstrømningsmidler")

VI. FINANCIAL STATEMENTS

NTNU APPROPRIATION (NOTE 1)

The Museum receives appropriations from NTNU within three budget allocations: The allocation for operations (RD), also called the operating accounts, the allocation for strategy and restructuring (RSO) and the allocation for common costs (RF). In addition, the Museum has its own income in the appropriation accounts such as ticket sales and sales from the museum shop; see note 3.

Funds for strategy and restructuring (RSO) cover allocations for recruitment positions and (partial) financing of major pieces of equipment. Common funds (RF) pay for NTNU's own share and some of the Museum's costs for the MUSIT (Museum IT) collaboration of university museums.

The Museum's appropriation incomes are relatively stable and are adjusted mainly to reflect salary and cost of living increases. Individual appropriations for scientific equipment, recruitment positions or security measures can vary from year to year.

EXTERNAL FUNDING (NOTE 2)

The Museum's income statement consists of appropriation-funded operations (BFV), collaboration- or commission-funded activity (BOA or externally funded operations) and change in the Museum's earned capital reserves. Income from externally funded projects is recognized as the activity is completed (costs). The accounting result for externally funded projects will always be reported in the accounts as zero. Externally funded projects provide an accounting result (surplus or deficit) only when they are finalized in the accounts.

Income from external funding includes sales of services or activities that are not (fully) financed by NTNU's primary appropriations from the Ministry of Education and Research. Externally funded activities are defined as activities funded through commissions or collaboration (BOA). For collaborative research projects, the Museum raises funds from national and international sources without requirements for deliverables. Commissioned research refers to projects in which NTNU performs services for payment from external clients that have a requirement for delivery through entry into a contract.

Total accounting of all externally funded activities (collaborative and commissioned) is implemented through NTNU. This means that for the Museum's collaborative projects, all direct and indirect costs, including the Museum's own contributions, are accounted for.

Archaeological surveys conducted under the Cultural Heritage Act are funded by the developer or the Directorate for Cultural Heritage according to guidelines, and are classified as collaborative projects.

Collaborative projects are reported excluding relayed funding, funds that the Museum receives from contributor(s) to cover the collaboration partners' share of the project. In 2017, relayed funding amounted to NOK 6.64 million.

The Museum has increased application activities to the Research Council of Norway and the EU. Collaborative projects funded by the Research Council of Norway show an increase from NOK 7.6 million in 2016 to NOK 11.2 million in 2017.

OTHER EXTERNAL AND INTERNAL REVENUES (NOTE 3)

Ticket revenues from public exhibitions and sales from the Museum Shop and individual reimbursements are recognized under Other Income. The increase in 2017 is due to the exhibition "BODY WORLDS Vital", which had a gross ticket income of more than NOK 8.3 million.

INVESTMENTS (NOTE 4)

Investments are reported as costs in the income statement for each year. There is a central fixed assets register of all investments at NTNU. Capitalized assets and depreciation are only recognized in NTNU's consolidated financial statements.

Investments and depreciations are included in the calculations when setting rental prices for use of the nine defined Museum premises.

PAYROLL AND SOCIAL SECURITY COSTS (NOTE 5)

The largest cost in the accounts is payroll and social security costs at NOK 95.0 million. These constitute about 57.7% of the total costs.

(Figures in NOK thousand)	2015	2016	2017
Salaries	62,521	64,289	67,134
Holiday pay	7,785	7,896	8,364
Employer's contribution	11,040	11,128	11,851
Pension costs	8,410	8,314	8,353
Sick pay and other reimbursements	-1,578	-2,426	-1,541
Fees, contractors and fees, board, councils and committees	324	589	408
Other benefits	537	363	451
Total payroll costs	89,038	90,153	95,020
Number of FTEs	111.0	116.2	119.3

The Museum had 119.3 full-time equivalents in 2017 compared with 116.2 in 2016, excluding field staff at hourly rates, as reported to the Database of Higher Education (DBH). Of the Museum's 119.3 full-time equivalents in 2017, 74.9 were financed by appropriations from NTNU, 7.0 by the Research Council of Norway, and 37.4 by income from other external projects.

Only those who receive a monthly salary at the time of the report to the Database for Statistics on Higher Education (DBH) in October are recorded as work years. The Museum has a large field season during the summer with many temporary field workers. These staff are, in general, not included in the reporting to DBH. This is also the case for extra help hired for the summer for the Ringve Botanical Garden or for the scientific collections, for example.

In addition to the general pay settlement, the increase from 2016 to 2017 is largely due to an increase in the number of recruitment positions and lower reimbursement.

MUSEUM DIRECTOR - Salary and social security costs

(figures in thousand kroner)	2015	2016	2017
Payroll	920	977	975
Accrued holiday pay	123	130	130
Pension contribution	132	129	127
Other social security payroll expenses	167	175	175
Total salaries and personnel costs	1,342	1,411	1,407

BOARD OF DIRECTORS - fees and other expenses

(figures in thousand kroner)	2015	2016	2017
Fees	58	39	36
Other expenses	11	38	20

Fee are paid only to external members of the Museum Board according to the Norwegian government scales for meeting allowances.

OTHER OPERATING EXPENSES (NOTE 6)

Other operating expenses of NOK 42.0 million apply to operating and travel expenses. This constitutes 25.5% of the Museum's total costs compared with 21.8% in 2016.

(figures in thousand kroner)	2015	2016	2017
Lease of machinery, fittings, equipment and similar	2 151	2 355	8 173
Purchase of small equipment etc.	4 979	7 899	8 298
Purchase of services outside NTNU	8 884	9 752	15 715
Travel and subsistence, etc.	4 333	6 546	6 536
Other operating expenses	3 734	5 345	3 282
Total other operating expenses	24 081	31 897	42 004

The increase from 2016 is mainly due to higher levels of externally funded activity. In particular, there were cost increases for the purchase of services from contractors for surface stripping and similar in connection with excavation projects. In addition, there were special costs related to the exhibition "BODY WORLDS Vital".

CHANGE IN EARNED CAPITAL RESERVES (NOTE 7)

The change in earned capital reserves consists mainly of the net results from projects that were completed in 2017. Earned capital reserves decreased by NOK 1.16 million in 2017 and, as of 31 December 2017, came to NOK 2.6 million. The net result from concluded collaborative projects is part of the operating accounts (appropriation accounts).

INTERNAL RENT (NOTE 8)

Internal rent recognized in the income statement for 2017 amounted to NOK 21.16 million. The rent appropriation, which is part of the total appropriation from NTNU, is NOK 19.7 million. The difference of NOK 1.46 million must be financed by the Museum's operating appropriations and income from externally funded activities. The share covered from the Museum's own appropriations or external funding is increasing.

INTERNAL ITEMS (NOTE 9)

Internal items consist mainly of:

- A) Sales of services and reimbursements between the operating accounts and externally funded operations, own share and internal funding of collaborative projects and the conclusion of collaborative projects. These transactions are eliminated in the total accounts.
- B) Sales of goods and services internally and to other units at NTNU.

TRANSFERS (NOTE 10)

Transfers in the appropriation accounts are accumulated accounting profits. The transfers have an important function in ensuring stability in years with low externally funded revenue, as reserve capital in case of damage to critical infrastructure, and to cover possible accounting deficits in the future. The need for reserves and security must be seen against the need to activate these transfers to increase the Museum's strategic room for manoeuvre, strengthen the Museum's primary mission and enhance its competitiveness to generate a consistently higher level of externally funded activity (BOA).

Transfers in the appropriation accounts at the end of 2017 totalled about NOK 11.6 million, consisting of NOK 2.9 million to the allocation for strategy and restructuring (RSO) and NOK 8.7 million to the allocation for operations (RD).

The Museum Board has decided that the Museum's transfers to the allocation for operations (RD) should be in the range of 8 to 12% of ordinary operating appropriations excluding internal rent. During 2017, the transfer to the allocation for operations (RD) increased from 6.3% to almost 15%.



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