



27th

**Nordic Medical
History Congress**

Wednesday **22**
to Saturday **25**
May **2019**

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c) Medical Museion.
d) The Royal Danish Library, incl. guided tour in the unique collections of Thomas Bartholin and Nicolas Steno



Thursday 23 May

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Welcome!

The main purpose is to bring scholars, curators, clinicians, and students within the (Nordic) history of medicine together to present and discuss new developments and experiences.

We are looking forward to spending time with you during the exciting and inspiring days in Copenhagen in May 2019.

On behalf of the Danish Society of Medical History,

Ulrik Bak Kirk,
Organizing Committee President

PROGRAM

A broad spectrum of topics will be presented both as keynote talks and "THE FOLLOWING" parallel sessions:

DNA

Professor Eske Willerslev from the University of Copenhagen will talk about "DNA Use in the Mapping of Early Human Migrations", and professor em. Jørgen Lange Thomsen from the University of Southern Denmark will talk about "DNA Use in Forensic Medicine".

Art & Medicine

PhD Eva Åhrén - Director at Unit for Medical History and Heritage - from the Karolinska Institute in Stockholm will talk about "Figuring it out: Visualizing medical subjects", and MD PhD MSc LicSc Jan Bondeson - writer of best sellers about medical history - will talk about "Medical Curiosities in Old Picture Postcards".

THE PAST, THE PRESENT & THE FUTURE

Professor Ken Arnold from the Medical Museion in Copenhagen will moderate a panel debate about "The History of Medicine: Quo Vadis?". Professor em. Øivind Larsen from University of Oslo will share a selected few stories from "The Medical History Congresses 1967-2019".

Other topics will be presented in the parallel sessions by both invited speakers and you.

Excursions & Social Events

FEES

Full Congress: 2.999 DKK

Including welcome reception (22 May) and two congress days (23 & 24 May). You will have to sign-up for the social dinner and excursions separately.

(PhD) Student Delegate: 1.599 DKK

Including welcome reception (22 May) and two congress days (23 & 24 May). You will have to sign-up for the social dinner and excursions separately.

One-day Pass (Thu 23/5): 1.599 DKK

You will have to sign-up for the social dinner and excursions separately.

One-day Pass (Fri 24/5): 1.599 DKK

You will have to sign-up for the social dinner and excursions separately.

Social Dinner Fri 24 May: 499 DKK

Accompanying persons are most welcome – simply buy two tickets. We offer a great gourmet 3-course dinner with wine.

Excursion Thu 23 May (19:30-20:30): 149 DKK (limited seats available)

PhD Rune Frederiksen, Head of Collections at Ny Carlsberg Glyptotek, will present selected masterpieces: Diseases and Medicine in the Ancient Greek World.

Exquisite Excursions Sat 25 May (10-13): 249 DKK (limited seats available)

Excursions listed below are to be confirmed – more information upon registration:

- a) The Abby ruins and museum, incl. life and story of Vilhelm Møller-Christensen.
- b) Nyboders Mindestuer, incl. new 1853 CPH cholera epidemic exhibition.
- c) Medical Museion.
- d) The Royal Danish Library, incl. guided tour in the unique collections of Thomas Bartholin and Nicolas Steno.

CALL FOR ABSTRACTS

Deadline: 1 January 2019.

10 bursaries for (PhD) students: Win free congress registration upon accepted abstract

The 27NMHC offers up to 10 bursaries consisting of free registration to the congress for (PhD) Students (worth 1.599 DKK). Eligible are (PhD) students, who are working in Europe and whose abstract has been accepted (presenting author).

You will have to register for the congress before being reimbursed by the organizers, and the offer does not include social dinner & excursions.

REGISTRATION

<https://billetto.dk/e/the-27th-nordic-medical-history-congress-billetter-315384>

Abstract Submission Guidelines

**- Only electronic submissions
will be accepted for review.**

**Send your abstract by mail to:
dmhs.1917@gmail.com**

**- The abstracts should be
submitted in English no later
than 1 January 2019.**

We look forward to your participation in this hopefully exciting and inspiring event and we would love to see you as our guest in Copenhagen.

Ulrik Bak Kirk
Organizing Committee President

SUBMITTED ABSTRACTS MUST INCLUDE

- 1) Title
- 2) Presenting author and co-authors, incl. contact information
- 3) Affiliation(s)
- 4) Applying for free congress registration upon accepted abstract
- 5) Preference for oral presentation or poster presentation
- 6) Audio-visual equipment requirements
- 7) Abstract text (no more than 250 words)

- The Scientific Committee will determine whether the abstract will be accepted for oral presentation or for a poster presentation, with consideration to be given to the author's preference.
- Oral presentations: Speakers should confirm upon submission of their abstract which audio-visual equipment they will require for presentation.
- An author may submit no more than 2 abstracts as presenting author. You may be co-author to an unlimited number of abstracts.
- The presenting author is required to ensure that all co-authors are aware of the content of the abstract before submission to the Scientific Committee.
- In submitting paper(s), you certify that the paper(s) is/are your contribution and give permission for the Organizing Committee to publish it/them – if accepted – in the Congress Interactive ePDF, including all abstracts etc.
- You further agree that if your paper(s) is/are accepted, you promise to appear and present your paper(s) or arrange for its/their poster presentation(s).

EXAMPLE (200 WORDS)

1. **Title:** The globalization of chronic disease
- 2a. **Presenting author:** John Doe (1), john@doe.com.
2b. **Co-author(s):** Jane Doe (1,2), jane@doe.com & Janet Doe (2), janet@doe.com.
3. **Affiliation(s):** (1): University of Gothenburg, Sweden; (2): University of Lund, Sweden.
4. **Applying for free congress registration upon accepted abstract (students only):** Yes.
5. **Preference for oral presentation or poster presentation:** Oral presentation.
6. **Audio-visual equipment requirements:** Nothing to declare.
7. **Abstract:**
Chronic noncommunicable diseases in low- and middle-income countries have recently provoked a surge of public interest. This paper examines the policy literature, notably World Health Organization archives and publications going back to the 1970s, to analyze the emergence and consolidation of this new agenda.

Starting with programs to control cardiovascular disease in the 1970s, experts from eastern and western Europe had by the late 1980s consolidated a program for the prevention of noncommunicable diseases risk factors at the WHO. These diseases remained a minor concern until the collaboration of World Bank health economists with WHO epidemiologists led to the Global Burden of Disease study that provided an "evidentiary breakthrough" for noncommunicable diseases activism by quantifying the extent of the problem.

Soon after, WHO itself underwent major reform. Noncommunicable diseases advocacy contributed to revitalizing WHO's normative and coordinating functions. By leading a growing advocacy coalition, within which The Lancet played a key role, WHO established itself as a dominant institution in this domain. However, ever-widening concern and advocacy has not yet led to major reallocation of funding in favor of noncommunicable disease programs in the developing world.

TEN BURSARIES FOR (PHD) STUDENTS

Win **free** congress registration upon accepted abstract.

The 27NMHC offers up to ten bursaries consisting of free registration to the congress for (PhD) Students (worth 1.599 DKK). Eligible are (PhD) students, who are working in Europe and whose abstract has been accepted (presenting author).

You will have to register for the congress **before** being reimbursed by the organizers, and the offer does **not** include social dinner & excursions.

Committees

ORGANIZING COMMITTEE (OC)

President

Ulrik Bak Kirk, DMHS (Denmark)

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Members

Ole Didrik Lærum, University of Bergen & University of Copenhagen

Eva Åhrén, Karolinska Institutet (Sweden)

Venue & Hotels



VENUE

CPH Conference

Located at Tietgensgade 65, 1704 Copenhagen V.
Just 50 metres from Copenhagen Central Station.

DGI-Byen's new conference centre – **CPH Conference** – offers 14 super-modern meeting rooms, lounges for relaxing, a rooftop terrace, and a restaurant. We also take you on a journey through Copenhagen because every floor of the conference centre represents a section of the city and every room is a place with its own unique atmosphere. Mette Jensen, DMHS (Denmark)

HOTELS

HOTELS: (NOT INCLUDED IN THE CONGRESS FEE)

Min. walk to CPH Main Station – CPH Conference

DGI-Byens Hotel *** (8 – 0, closest to Congress venue)
<https://www.dgi-byen.dk/hotel/vaerelser/>

Hotel Ansgar *** (6 – 1)
<http://ansgarhotel.dk/online-booking/>

Hotel Tiffany *** (5 – 2)
<http://hotel-tiffany.copenhagen-hotel.net/en/>

Saga Hotel ** (3 – 4)
<http://www.sagahotelcopenhagen.com/>

Annex Copenhagen ** (4 – 4)
<https://www.annexcopenhagen.dk/#/>

Zleep Hotel *** (4 – 4)
<https://www.zleephotels.com/da/hotel/copenhagen-city/>

CPH Backpackers ** (1 – 5)
<http://copenhagen-backpackers.dk/>

Good Morning *** (3 – 5)
<http://copenhagen-star-hotel.copenhagen-hotel.net/en/>

Urban House ** (4 – 5)
<http://urban-house.copenhagen-hotel.net/en/>

Best Western Hebron *** (5 – 5)
<https://www.hebron.dk/en/>

Hotel Astoria *** (1 – 6)
<https://www.brochner-hotels.dk/hotel-astoria/>

Grand Hotel *** (2 – 7)
<http://www.grandhotel.dk/>

Copenhagen Plaza **** (3 – 7)
<http://copenhagen-plaza-hotel.at-hotels.com/da/>

Nimb Hotel ***** (3 – 7)
<https://www.nimb.dk/da/hotel>

Scandic Webers **** (4 – 7)
<https://www.scandichotels.dk/hoteller/danmark/kobenhavn/scandic-webers>

CABINN City ** (5 – 7)
<https://www.cabinn.com/en/hotel/cabinn-city-hotel>

Comfort Hotel *** (5 – 7)
<http://comfort-vesterbros-copenhagen.hotel-ds.com/da/>

First Hotel **** (5 – 7)
<https://www.firsthotels.dk/hoteller/danmark/kobenhavn/first-hotel-mayfair/>

Scandic Kødbyen **** (12 – 10)
<https://www.scandichotels.dk/hoteller/danmark/kobenhavn/scandic-kodbyen>

Wakeup Copenhagen ** (12 – 12)
<https://www.wakeupcopenhagen.dk/#/search>

Tivoli Hotel **** (15 – 15)
<https://www.tivolihotel.dk/>

Copenhagen Island **** (20 – 16)
<https://www.copenhagenisland.dk/hotellet/>

Prof. Eske Willerslev (DK)

Abstract

CV

DNA Use in the Mapping of Early Human Migrations

Thursday 23 May, 09:30 – 10:15

Prof. Em. Jørgen Lange Thomsen:

The History of DNA Use in Forensic Medicine

Thursday 23 May, 10:15 – 11:30



Abstract

Alec Jeffreys made by accident his groundbreaking discovery in September 1984 on the use of DNA polymorphism in crime work. It only took a couple of years before the police applied his discovery on homicide cases. As a forensic pathologist I took part in 'The Miracle', since it was introduced in Denmark in the early nineties.

In my presentation, I shall describe the use of the DNA technique, including the possible pitfalls.

Cases of homicides and sexual abuse will be mentioned.

CV

Born in Copenhagen 1944. Medical Doctor 1970.

Specialist in Forensic Medicine and in Surgical Pathology, Denmark and the UK.

Full Professor, State Forensic Pathologist and head of the Institute of Forensic Medicine, University of Southern Denmark since 1996. Professor Emeritus since 2015.

Doctoral Thesis: Alcoholics in Forensic Medicine.

Human Rights Award, 2017, International Association of Forensic Sciences.

About 200 publications in scientific journals.

Books for a broad audience about history (together with author Marie Helleberg).

Session: The History of Signs of Death

Thursday 23 May, 11:30 – 13:00

#1 Presenter:
Prof. Em. Jørgen Lange Thomsen

*Dept. of Forensic Medicine,
University of Southern Denmark.*

jthomsen@health.sdu.dk



The Cause of Death in Historical Individuals

I have used my knowledge and experience to look into the life and death of historical individuals. It gave me a number of surprises. Alcoholism and syphilis are not at all as prevalent as thought of.

In my presentation, I have chosen – among others – to describe my findings in Alexander the Great, Oscar Wilde and Karen Blixen.

Session: The History of Signs of Death

Thursday 23 May, 11:30 – 13:00

#2 Presenter:

Dr. Jan Bondeson, MD, MSc, PhD (lic.scient.)

*Clinical Senior Lecturer, School of Medicine,
Cardiff University, Wales.*

bondesonj@cardiff.ac.uk



Buried Alive: *The history of the signs of death and the risk of a premature burial*

Readers of the tales of Edgar Allan Poe may comfort themselves with the notion that he must have exaggerated: Surely people of the 1800s could not have been at a risk of being buried alive? But such reports filled medical journals as well as popular fiction, and fear among the populace was high.

This talk will describe the medical and folkloristic aspects of the fear of a premature burial: bizarre security coffins with bell-ropes and escape hatches, waiting mortuaries for decaying corpses to ensure death was certain before burial, and the search for an infallible sign of death. And are the present-day stratagems for determining death totally reliable?

Session: The Art of Medical Moulages

Thursday 23 May, 11:30 – 13:00

PRESENTATION

#1 Presenter: Eva Åhrén, PhD

*Director, Unit for Medical History and Heritage,
Karolinska Institutet, Stockholm, Sweden.*

eva.ahren@ki.se



Moulage Collections in the Nordic Countries

In 2016, scholars in the Nordic countries came together, at a Danish initiative, to study moulage collections in dermatological departments, museums, and in private ownership. This paper will describe the results from Finland, Denmark, Norway, and Sweden, and present the contents, history, and current state of the moulage collections.

It will also discuss the cultural, historical particularities and significance of the moulages, focusing on those that are unique and locally manufactured. The research will hopefully generate more scholarship on the subject and increase awareness of the artistic and historical value of these collections.

- "Ylppö's children" is a collection of moulages made in Berlin 1918-1920 by artist Annie Müllensiefen for

Finnish pediatrician Arvo Ylppö. Eighty of the moulages, depicting a range of transmissible diseases including tuberculosis, syphilis, and poxes affecting infants, survive at the Helsinki University Museum. They have previously been on display in popular exhibitions as well as teaching collections.

- Danish artist and Panoptikon director Theodor Edelmann made moulages for the Finsen Institute of Medical Light in Copenhagen in 1900-1930. Nobel Laureate Niels Finsen initiated the making of moulages of patients treated for skin diseases, mostly lupus vulgaris. Today, sixty-seven moulages survive in the collections of the Medical Museum, but the patient records are lost.
- The Bergen Leprosy Museum holds thirty-one moulages of patients' faces and limbs. Eighteen of these were donated by German dermatologist Oscar Lassar, and probably made by

the mouleur Heinrich Kasten. Leprosy specialists Daniel Cornelius Danielssen and Gerhard Armauer Hansen made Bergen an international center of leprosy research, but nothing is known about their use of moulages.

- Stockholm's mothballed Medical History Museum has a collection of more than three hundred moulages in storage. Many of these dermatological and venerological moulages were bought from German mouleurs, e.g. Fritz Kolbow, and used in medical education at Karolinska Institutet and S:t Görans Hospital. Some were made locally by a Dr. M. Nelken, who collaborated with dermatology professor Johan Almkvist.

Ref: Worm AM, Sinisalo H, Eilertsen G, Åhrén E, Meyer I: Dermatological moulage collections in the Nordic countries. *J Eur Acad Dermatol Venereol.* 2018 Apr;32(4):570-580.

Session: The Art of Medical Moulages

Thursday 23 May, 11:30 – 13:00

#2 Presenter: Prof. Dr. Thomas Schnalke

Berlin Museum of Medical History at the Charité, Germany.



Directed Views: *Focusing patients and diseases in medical moulages.*

From its very beginnings on, medicine has tried very successfully to direct and focus the view of the viewers by its ingenious image worlds: beneath the skin into the depths of a highly functional "body machinery" consisting of organs and tissues, as well as onto the skin to study surfaces and formations especially of typical signs of diseases.

The findings have been documented in a large variety of different media and materials – drawn, printed, photographed, scanned and animated with the help of servers and clouds, but also kept in 3D as true dry and wet specimens or as replicas made from plaster, wood, papier mâché, plastics or wax.

In my talk I will focus on the steering of the medical gaze referring to wax models, anatomical and pathological specimens and especially to clinical moulages in former times. This will open a door to a closer inspection of anonymous, normed and highly idealized visualisations of internal body structures in Early Modern Times on the one hand. On the other hand, this will follow the reorientation of the medical viewer's eye deep into the pathological alterations of specific body lesions on a specific patient's skin in the 19th and 20th centuries.

I would like to stress the point that in each clinical moulage the patient's subjectivity, his or her individual personality is undoubtedly ingrained and embedded to a certain degree. Thus, these highly realistic medical wax portraits form a unique source still for teaching medicine in a modern patient-orientated way, but also for discovering and reconstructing the patient in medical history.

Session: The Story of Nordic General Practice

Thursday 23 May, 11:30 – 13:00

PRESENTATION

#1 Presenter: Ole Didrik Lærum (1,2)

1: The Gade Laboratory of Pathology, Institute of Clinical Research, Haukeland University Hospital, Bergen, Norway

2: The Finsen Laboratory and Laboratory of Radiation Biology, Rigshospitalet/University of Copenhagen.



A TALE OF GENERAL PRACTICE AT VOSS: *EXPERIENCES FROM COMMUNITY MEDICINE IN WESTERN NORWAY 1850-1950*

The municipality of Voss is a mountainous area 100 km east of Bergen with an urban center at the Voss Lake, called Vossevangen.

Since the middle of the 19th century they have had a stable medical service, where the doctors stayed there for most of their lives, altogether 7 over a hundred years' period.

Since about 2/3 of their working time was spent on the way to and from their patients, often with no suitable roads and rather primitive conditions in general, their spouses had to participate in the medical work, taking care of patients who came when the doctor was away. One single visit to a patient could take up to 24 hours.

Until around 1900 the work as a community doctor was considered a dangerous profession. Their mean age at death was 6-7 years lower than the general population, and in 1/3 of the cases the cause of death was due to their work: Accidents, heart failure, total exhaustion and serious infections.

Essentially, the medical care for patients was a personal responsibility for the doctor, which throughout the 20th century was gradually replaced by a social system, ending with the welfare state after the second world war.

Session: On the Edge of Orthodox Medicine

Thursday 23 May, 16:00 – 17:30

#1 Presenter: Anders Bank Lodahl, PhD

*Visiting Researcher, Dept. of Sports Sci.
& Clinical Biomechanics, Uni. of Southern Denmark.*

ablodahl@health.sdu.dk



Skodsborg Badesanatorium, 1898-1992

Skodsborg Badesanatorium was founded in 1898 on the Seventh-Day Adventist principles of health it promoted health through a preventive holistic lifestyle based on vegetarianism without unhealthy stimuli as alcohol, tobacco, coffee and tea with treatments with light, water and fresh air. These principles were in the beginning of the 20th century a part of the health reform movement, which held a mild critic against the established medical system.

Even though the orthodox medicine did incorporate some of these ideas, they were never fully accepted. All through its existents the sanitarium had to interpret its commitment to these principles in relation to the orthodox medicine and the established medical system.

The sanitarium is an example of how a private health institution thrived while in being alternative enough to provide, what patients could not get at the public hospitals, but still orthodox enough to keep its scientific reliability.

Especially in the 1930s the founding doctor, Carl Ottosen, succeeded in placing the sanitarium in the forefront of the orthodox medicine by its focus on preventive medicine and especially the physical treatments deriving from the health reform movement. In this period the sanatorium called itself the largest health resort in Scandinavia.

Less successful was the sanitarium in the 1980s, when it, inspired by the new preventive focus in orthodox medicine, tried to renew their image of preventive medicine build on an outspoken Adventist holistic view on health. This turn also included treatments like acupuncture, which were not fully accepted in the orthodox medicine and rejected by the Adventist organization because of religious concerns. This holistic turn was a part of an unsuccessful effort to find new ways to attract new private patients before its closure in 1992.

Session: Donating Brains and Organs:

Thursday 23 May, 16:00 – 17:30

More Than Waste?

#1 Presenter: Thomas Erslev, PhD Fellow, Aarhus University

My PhD project investigates the history and current status of a Danish brain bank holding 9.479 brains from psychiatric patients collected between 1945 and '82.

I investigate the collection's history through plural perspectives: as a scientific resource, as a bioethical problem, as a workplace, as a public phenomenon, etc.

[Read more](#)



#1 Archiving Human Brains - *Temporality and materiality in a Danish collection of 9.479 pathological brains*

Collected 1945-1982 at Psychiatric Hospital Risskov, the brain collection is the subject of my PhD thesis. In my talk, I will present the main findings and perspectives from my research, which identifies temporality and materiality as key concerns in ethical, epistemological, political, as well as quotidian engagements with the collection throughout its existence.

Actors ranging from psychiatrists and pathologists to lay people, politicians and religious authorities mobilise understandings of time and matter, which underpin their conceptions of the brain collection as either wasteful or valuable, threatening or promising.

Session: Donating Brains and Organs:

Thursday 23 May, 16:00 – 17:30

More Than Waste?

#2 Presenter: Maria Olejaz, PhD

*External lecturer, Centre for Medical Science and Technology Studies,
Department of Public Health, University of Copenhagen.*



#2 Making bodies available for dissection: *A discussion of historical and contemporary relations between bodies and medicine in Denmark*

Anatomical dissection is a medical practice which has taken place for centuries and continues to be relevant in medical education and research today. It is a practice which relies on a supply of dead human bodies.

Based on historical work as well as in-depth qualitative interviews with body donors and ethnographic fieldwork in Danish dissection labs, this paper situates anatomical dissection in a larger historical and societal frame.

It pays attention to the changing conditions of making bodies available for dissection, juxtaposing 18th century royal decrees that made available bodies of criminals and the poor with today's willed donation programs.

Furthermore, it asks what this availability of bodies means for the culture of medicine as well as what it says about historical and contemporary understandings of death and of the changing relationship between the state and the individual.

Eva Åhrén, PhD:

Figuring it out:

Visualizing medical subjects

Friday 24 May, 09:30 – 10:15



Abstract

Throughout history, visual communication has been crucial in medical practice, education, and research. This talk deals with image-making in the history of Western medicine, focusing on three main categories: anatomical illustrations, patient portraits, and representations of microscopic observations. I will argue that visualizations are an integral part of medical knowledge production, as well as communication.

The remarkable woodcuts in Andreas Vesalius' *De humani corporis fabrica* of 1543, represent a qualitatively and quantitatively new approach to visualization. The sheer number of images, expertly printed on large paper sheets had never been seen in a book on the human body before. Neither had the degree of accurate detail and the high quality of the work of the artists involved. Whereas earlier representations of bodies were more schematic, this new style emphasized a kind of naturalism, drawing on the rhetoric of direct observation. This section of the talk will discuss two main styles of anatomical art in the Western tradition: universalization and specificity.

While anatomical imagery could idealize bodies for the sake of universality, images of morbid anatomy and diseased patients have to be specific. There are many ways of achieving this.

First, I will show Norwegian artist J. L. Losting's portraits of patients with leprosy, which open a window into a specific time and place.

Second: old photographs of people with war wounds or disorders like scoliosis, approach the patients head-on, in a revealing, but often respectful manner.

Third: wax moulages and photos of dermatological and venerological conditions focus instead on the lesion, making it the object of the portrait, rather than the patient.

Finally, I will discuss how scientific objects in medicine are visualized, as a crucial part of the research process, as well as a means of communicating results. Making images is a way of figuring things out.

Dr Jan Bondeson, PhD:

The Lion Boy and Other Medical Curiosities in Old Picture Postcards

Thursday 24 May, 10:15 – 11:30



Abstract

In the 1900s and 1910s, there was a multitude of human curiosities on show both in Britain and continental Europe: giants, dwarfs, conjoined twins, abnormally fat or thin people, and individuals with severe congenital deformities. Some of the 'freaks' were self-made: men growing abnormally long beards, fasting artists going without food for months, and people aiming to walk around the world for a wager.

Since this period of high interest in human phenomena on show coincided with the great postcard boom in Edwardian times, there is no shortage of images to illustrate this forgotten chapter of the history of medicine.

CV

Jan Bondeson MD PhD is a former senior lecturer and consultant physician at Cardiff University, and the author of *Cabinet of Medical Curiosities* (Cornell UP 1997), *The Two-headed Boy and Other Medical Marvels* (Cornell UP 2000), *Buried Alive: The Terrifying History of our Most Primal Fear* (WW Norton 2001), *The Lion Boy and Other Medical Curiosities* (Amberley 2018) and other history of medicine books.

Session: 'Let there be light'

Friday 24 May, 11:30 – 13:00

PRESENTATION

- and there was light

#1 Presenter:
Ian G. Bearden, Professor MSO

The Niels Bohr Institute, Copenhagen.



The secrets of light

This talk will, I hope, shed some light on some of the properties of electromagnetic radiation. Not only the visible part of the spectrum, a very small range of frequencies which our eyes evolved to see; but the entire spectrum from very long wavelengths to ultra-high energy gamma rays.

I will attempt to illuminate some of the connections between physics and medicine relating to light, at least as it appears seen through the lens of an experimental particle physicist. Using various examples from medical imaging and nuclear and particle physics, I will discuss the close relationship between these fields.

Finally, I will discuss the physics behind PET scanners, from the world's most famous equation - $E=MC^2$ - to a few of the technical details of these incredible machines to illustrate how short lived anti-particles can now be used to save lives. A table top "toy" PET scanner we have developed at the Niels Bohr Institute will be presented.

After the session, participants will be able to use this small device to scan a small object to locate where matter and anti-matter meet, annihilate, and send out a recognizable signature of high energy "light".

Session: 'Let there be light'

Friday 24 May, 11:30 – 13:00

- and there was light

#2 Presenter:
Poul Jørgen Jennum, Professor,
DMSc, Chief physician

*Danish Center for Sleep Medicine,
Rigshospitalet, Copenhagen*



History of daylight, health and the circadian rhythm

The earliest identification of circadian processes dates back to the 4th century. The first record of endogenous circadian oscillator was noted by the French scientist Jean-Jacques deOrtous de Mairan in 1729, when he discovered a 24-hour patterns in the plant Mimosa pudica.

Identification of the 24h cyclicity was noted in 1896 and primarily in 1900 a 24-hour activity pattern in the absence of external cues such as light and changes in temperature was identified. Ron Konopka and Seymour Benzer identified the first clock mutant in *Drosophila* in 1971 and called it 'period' (per) gene, the first discovered genetic determinant of behavioral rhythmicity.

The per gene was isolated in 1984 by two teams of researchers. Konopka, Jeffrey Hall, Michael Rosbash and their team showed that per locus is the centre of the circadian rhythm, and that loss of per stops circadian activity. Further discoveries lead Hall, Rosbash and Young to receive the Nobel Prize in Physiology or Medicine 2017.

The circadian cyclicity is maintained by entrainment on light. Discovery of the two-process model of sleep integrating sleep-wake rhythmicity (homeostatic process) and the circadian process was described by Alexander Borbely in 1982.

Understanding of the regulatory pattern have since lead to understanding for relation to health, poor health, several disease processes. Understanding of these mechanisms have major implication of areas as different as memory consolidation, consciousness and metabolic processes.

Session: 'Let there be light'

Friday 24 May, 11:30 – 13:00

PRESENTATION

- and there was light

#3 Presenter: Benny Vittrup, Chief Physician

Dep. Oncology, Herlev Hospital, Copenhagen



A Historical Light On The War Against Cancer: *Can We Win This War?*

Cancer is a distorted version of ourselves and has been perceived as the emperor of all maladies. As a threat towards human survival cancer has a profound impact on the thinking in philosophy, science, culture and politics. Cancer is the lens through which mankind get the clearest light on the limitations in our existence.

Darwin's observational evolution theories – later understood as adaptive oncogenic mutations – gradually pulled cancer into the light from the darkness of religion. In the mid 1800's Virchow by help from the light microscope could demonstrate that all cells come from normal cells including cancer cells.

In the late 1800's Paul Ehrlich could selectively color cells and microbes with chemicals. He formed the idea of "magic chemical bullet" that selectively could kill cancer cells.

In 1953 the 4-letter molecular language of nature (DNA, RNA and protein synthesis) was revealed forming the scientific basic for mankind's war on cancer that was politically declared in 1971. The weapons were cell toxins originally discovered during world war I and radiation aiming at killing cancer cells by destroying their DNA, RNA and protein machinery.

With the discovery of the oncogenes new weapons was added aiming at killing mutated carcinogenic oncogenes. The discovery that our immune system daily destroys billions of carcinogenic oncogene mutations and protects us from cancer led to the aim of using the immune system as a weapon.

This lecture casts a historical light on the development of cancer therapy and a cautious optimism of winning this war.

Session: Leprosy Revisited

Friday 24 May, 11:30 – 13:00

#1 Presenter:
**Jesper Lier Boldsen, Professor MSO,
PhD (lic.scient.), Dr.Med.Sci. (Dr.Med)**

*Unit of Anthropology (ADBOU), Dept. of Forensic Medicine,
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Leprosy: *The Menace of
the Medieval Period*

The diagnosis of leprosy based on ancient skeletons is a probability statement as are all diagnoses. A lot of diagnostic tests with high sensitivities and specificities are available for modern diagnostic medicine. This is not the case in paleopathology.

In the case of leprosy it has been necessary to estimate sensitivity and specificity of six different leprosy related lesions by optimizing a 15-dimensional likelihood function. Using these statistics it has been possible to estimate the frequency of leprosy at death in several samples of skeletons.

The statistical methodology developed is better suited to estimate sample frequency than to classify individual skeletons as those from people who did or did not suffer from leprosy.

Several historical and medically interesting conclusions have come out of this research. First of all, leprosy was a very common disease that affected a large but variable fraction of the adult population.

The frequency of leprosy was, of course, higher among those buried on leprosarium cemeteries; but on ordinary medieval cemeteries between 4 and 47 % of the adults buried there suffered from leprosy at the time of death.

Leprosy is generally an adult onset disease. Based on Norwegian leprosy data from 1850-1920 it has been possible to describe the transition profile from the healthy to the leprous stage in a pre-antibiotic population. Using this profile it has been estimated that the relative risk of dying for people suffering from leprosy was two times as high as for people who did not have leprosy.

Following this it appears that in the village community of Tirup (Eastern Jutland, AD 1150-1350) leprosy reduced the productivity of the population by 10%. The leprosaria (Sct. Jørgensgård) were established in Denmark from the 13th to the 17th century. In Odense it appears that the founding of Sct. Jørgensgård in the 1270s led to the eradication of leprosy within 75 years – around 1350. In rural communities leprosy prevailed to shortly after the end of the Medieval Period in the middle of the 16th century.

Session: Leprosy Revisited

Friday 24 May, 11:30 – 13:00

#2 Presenter: Magnus Vollset, PhD

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Leprosy in Scandinavia: Institutions and legislations, 1840-1940

After Danielssen and Boeck's celebrated monograph "Om Spedalskhed" (1847/48), the Norwegian state established a research hospital tasked with developing a cure, as well as three large institutions to serve as "good homes" for people affected by the disease.

In Iceland, the same publication led to the leprosy hospitals being closed: Now that the disease was decidedly hereditary, segregation in run-down institutions was seen as unnecessary cruelty. Fifty years later, however, research proving an increased prevalence, the rise of contagionism, and money from the Danish branch of Odd Fellows, meant both new leprosy legislation and the opening of a new leprosy hospital.

In Sweden, a 'leper asylum' with twenty beds opened at Järvsö in 1870, and was soon expanded. In Finland, a state leprosy institution opened near Helsinki in 1900. Barely a decade later, at the Second International Leprosy Congress in Bergen in 1909, Germany, Iceland, Norway and Sweden were hailed as the exemplary in their isolation of 'lepers'.

This paper will give an overview of leprosy institutions and legislations in Scandinavia, 1840-1940, based on published reports and discussion from the period. It will discuss differences and similarities between the Scandinavian approaches, as well as how they influenced one another.