



**University of
Zurich** ^{UZH}

Institute of Anatomy – Centre for Evolutionary Medicine

Centre for Evolutionary Medicine

Annual Report 2012

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www.swissmummyproject.ch

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1 Management Summary



Dr Bouwman takes a biopsy for aDNA analyses of ancient Egyptian mummified intestines

1.1 Management Summary Head of ZEM

Dear friends, colleagues and supporters,

It is a real pleasure for me to present to you the newest ZEM annual report. It covers our activities during the year 2012. During this year, again, a lot of notable developments happened:

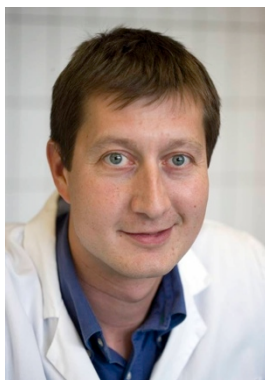
First, we were able to further establish the ZEM within and outside the University of Zurich. More collaborations and research projects are launched, e.g. in the molecular field but also in the other research groups. Also, with the Mummy exhibition "Mumien: Mensch, Medizin, Magie" we were able to present very successfully our and other mummy researchers work to a wider audience; this exhibition was possible thanks to the tremendous support of the University of Zurich, the Mäxi foundation and other foundations such as the Mercator foundation. The exhibition ran till early 2012 and in total almost 8000 people visited the exhibition within roughly three months. It was in various ways a pioneer project at the Irchel campus of the University of Zurich.

With the wonderful team of my employees we were able to acquire further grant money during 2012 eg. at the Swiss National Science foundation (to get a state-of-the-art Micro-CT scanner) or the Novartis Stiftung. Also, the ZEM was part of a successful University Research Priority Program application which will start in 2013 and link the ZEM even more to various research groups within the Science faculty. Also a constant flow of publications appeared in the name of the ZEM and this shows the academic impact of this still unique endeavor. Furthermore, various national and international media reports show the growing interest towards the ZEM by the public. Finally, we expanded the ZEM by officially adding a fourth research group covering basic research issues such as paleopathology or Egyptological issues.

The year 2012 was in general very successful and helped to further consolidate this big project "ZEM" both within and outside of the University of Zurich. We need to continue on this track and shall not rest but the foundations are now solid and help us to pursue such a continuation.

In the name of all my employees I thank for your interest, the support by the various members of the honorary committee, advisory board as well as the local and international collaborators and foremost the Mäxi Foundation for their continuous support who makes this all possible. If you have any comments or further specific interest please let us know anytime!

Sincerely,



Frank Rühli, Head ZEM

Zurich, 15th of March 2013

1.2 Address by the head of the Institute of Anatomy: “Building bridges and breaking borders”



Prof. Dr. Dr. Oliver Ullrich (Director, Institute of Anatomy, University of Zurich)

One of the first things, which an anatomist learns, is respect for the history. It took many centuries and countless researchers to understand the structure and function of the human body. Until today, Anatomy is one of the cornerstones of a doctor's medical education.

The concept of evolutionary medicine builds bridges – not only between the past, the present and the future, but also between scientific disciplines. Evolutionary medicine links history, archeology, pathology, anatomy, modern imaging and molecular biology under the questions of medicine, under the need for understanding evolutionary aspects of disease aetiology and patterns.

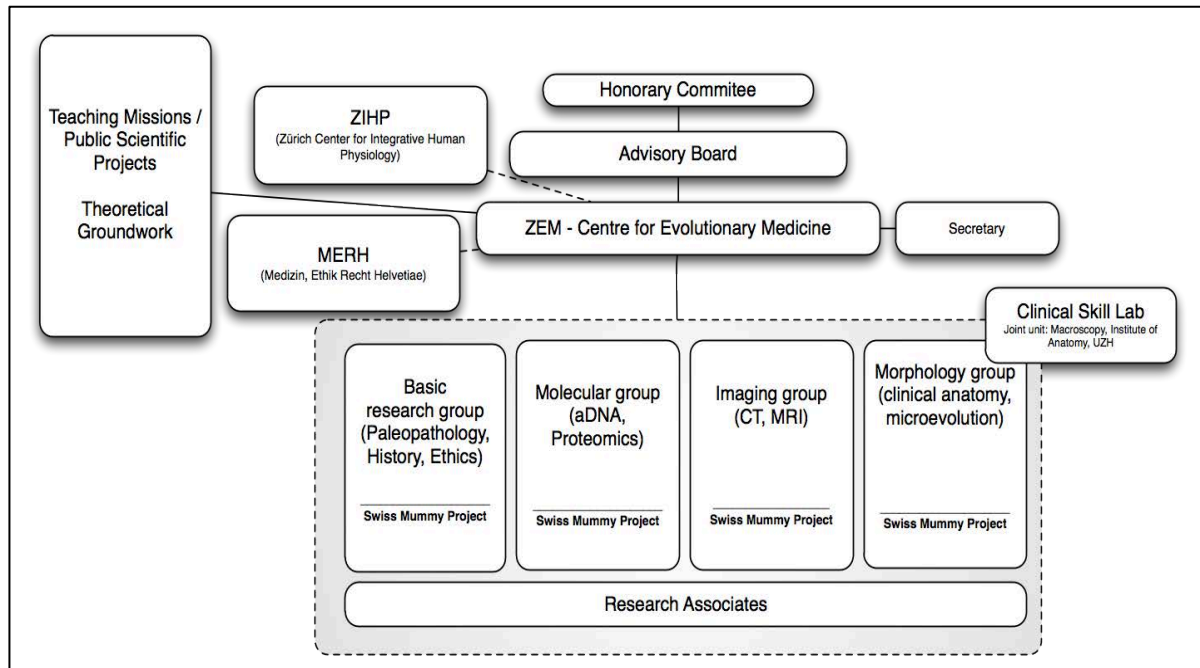
For evolutionary medicine, research conditions in Switzerland are excellent: Historic and recent data of Swiss Army conscripts represents a worldwide unique and unsurpassed precious source to study secular trends of body mass, stature and structure and to understand correlations between socio-economic development and anthropometric and metabolic changes. Very recently, ZEM members went to the Vatican to extend their studies to the Pontifical Swiss Guard of Holy See, founded in the 16th century and the only Swiss Guard that still exists.

To learn from history is a chance of forming and shaping our future. Thanks to the inimitable collections of historic data and specimens, there is a unique and powerful research potential in Switzerland, which is continuously advanced and developed by the ZEM. In this context, also the recently restored and catalogued Galler pathological bone collection represents an excellent historic database.

Modern Anatomy of today is no longer limited by methodological borders and is no longer confined into the classical research areas. Modern Anatomy is free to ask entirely new questions and to understand the human body from entirely new aspects. Modern Anatomy makes use of state of the art cellular, molecular and functional investigations, but maintains and develops its strong morphological competence. Today we are in an enormous privileged situation. We cannot only rely on the overall and easily available results of centuries of research, but also we can use modern sophisticated experimental methods and innovative concepts. Our colleagues from the center of evolutionary medicine developed their research fields with passion and with dedication, build bridges between disciplines and asked questions which are important for our society.

I wish to congratulate my colleagues from the ZEM for their pioneering work!

2 The Centre for Evolutionary Medicine



Organisational setting of the ZEM

Aim

As an academic medical project, the **“Zentrum für Evolutionäre Medizin” (ZEM; Centre for Evolutionary Medicine)** is one of a kind worldwide. As a transdisciplinary bridge between the past, the present and the future, researchers at the ZEM will study the evolutionary aspects e.g. of disease aetiology (contributing factors such as lifestyle or infectious environmental factors) and disease patterns (prevalence, socio-economic stratifications etc.) in general. Primarily musculoskeletal and joint diseases as well as the molecular evolution of pathogens disease will be studied.

Some general research questions:

- How does clinical medicine benefit specifically from evolutionary perspectives of disease?
- How do evolutionary vulnerabilities of human anatomy / physiology contribute to disease?
- How do ancient samples such as skeletons and mummies act as major source for the study of the evolution of disease, e.g. pathogen pandemics?

Evolutionary Medicine represents best interdisciplinary science, which thus has significance, e.g. for specialized clinicians and general practitioners. At the ZEM, researchers from fields as varied as anthropology, paleopathology, ancient DNA and proteomics research, veterinary sciences, human morphology and imaging shall work together. As one of the centre’s main interests is historical human remains and/or mummified tissue, the ZEM also favours a continuous reflection about ethical standards relative to highly invasive procedures and the ethical dilemmas that arise from dealing with historical remains. The centre **includes four main research units: a “biomolecular”, an “imaging”, a “morphology”** and a **“basic research”** group. A **“Clinical Skill Lab”** for transitional clinical research is also attached to the Centre, as are multiple local and international collaborations. The **Swiss Mummy Project** (focusing on the scientific examinations of ancient human mummies) is an on-going, earlier established, UZH research project, which forms now part of all research groups within the ZEM.

The ZEM is a Research Unit of the Institute of Anatomy, Medical Faculty, University of Zurich.

Honorary Committee

Dr M. Dell Ambroggio, Secretary of State for Education and Research, Federal Swiss Government

M. Coninx, Managing Director of “Finanz und Wirtschaft” Tamedia AG

Prof. F. Gutzwiller, Member of Swiss Senate for the canton Zürich

Dr T. Heiniger, Member of the governing council of the canton Zürich

M. Prenosil, CEO, Sprüngli AG, President of the City Association Zürich

Dr T. Wellauer, COO, Swiss Re, Zürich

Prof. D. Wyler, Vice President Medicine and Natural Sciences of the University of Zürich

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Prof. S. Gay, Rheumatology, Institute for Physical Medicine, UZH

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Prof. K. Grätz, Dean Medical Faculty, UZH

Prof. M. Hengartner, Dean Mathematics and Natural Sciences Faculty, UZH

Prof. M. Rudin, Institute for Biomedical Engineering, ETH

Prof. B. Tag, Institute of Law, UZH, Chairwoman Centre of Competence Medicine – Ethics – Law Helvetiae

Prof. M. Thali, Director Institute for Forensic Medicine, UZH

Prof. O. Ullrich, Director Institute of Anatomy, UZH

Prof. C. van Schaik, Director Institute for Anthropology, UZH

Prof. B. von Rechenberg, Director Center for Applied Biotechnology & Molecular Medicine UZH, Vetsuisse

International Collaborators

Prof. B. Blümich, Rheinisch-Westfälische Technische Hochschule, Aachen

Prof. M. Bock, Radiologisches Department, Universitätsklinik, Freiburg im Breisgau

Prof. B. Bogin, Loughborough University, Loughborough, Leicestershire

Dr E. Cappellini, Centre for GeoGenetics, Natural History Museum & University of Copenhagen

Prof. T. Gilbert, Centre for GeoGenetics, Natural History Museum & University of Copenhagen

Prof. M. Henneberg, Anatomical Sciences, University of Adelaide

Prof. I. HersHKovitz, Anatomy and Anthropology, Faculty of Medicine, Tel Aviv University

Prof. S. Ikram, Department of Egyptology, American University Cairo

Prof. R. Jankauskas, Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University

Prof. em. J. Komlos, Volkswirtschaftliches Institut, LMU München

Dr D. Piombino-Mascali, Department of Cultural Heritage and Sicilian Identity, Palermo

Dr Ch. Scheffler, Institut für Biochemie und Biologie, Universität Potsdam

Prof. W. Schiefenhövel, Human Ethology Group, Max-Planck-Institute, Andechs

Prof. B. Solomon, Department of Orthopaedics, Royal Adelaide Hospital

Prof. N. Tuross, Department of Human Evolutionary Biology, Harvard University

Prof. J. Tutkuvienė, Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University

PD A. Zink, Institute for Mummies and the Iceman, EURAC, Bolzano

Prof. Dong Hoon Shin, Department of Anatomy / Institute of Forensic Medicine, National University College of Medicine, Seoul

Amàlia Valls Martínez, Head of Paleopathology and Anthropology Dept. at Instituto de Estudios Científicos en Momias (IECIM), Madrid

Mercedes González Fernández, Director at Instituto de Estudios Científicos en Momias (IECIM), Madrid

Local Collaborators

Prof. J. Hodler, Institut für Diagnostische Radiologie, USZ

Prof. Ch. Pfirrmann, Radiologie, Uniklinik Balgrist, UZH

PD D. Schaer, Klinik und Poliklinik für Innere Medizin, USZ

Prof. R. Schlapbach, Functional Genomics Center, UZH, ETH Zurich

Divisionär A. Stettbacher, Oberfeldarzt, Schweizer Armee, Bern

Prof. G. Székeley, Institut für Bildverarbeitung, ETH Zurich

Prof. U. Woitek, Institut für Empirische Wirtschaftsforschung, UZH

3 The Research Groups



CT-based 3D-reconstruction of ca. 2000-year-old Iranian Salt mummy

3.1 The Molecular Group

Dr Abigail Bouwman (Head a.i.)

Dr Michael Campana (from 1. September)

Dr Christina Warinner (until 31. August)

Dr Natallia Shved (until 31. August)

Gülfirde Akgül, MSc, technician (Antje Caelers replacing G. Akgül during her maternity leave until 31. January)

Annina Krüttli, BA student

Molebogeng Bodiba, MSc-student University of Pretoria (from 1. September)



Extracting ancient DNA from a historic sample

- Ancient DNA investigation of the European origin of the CCR5-d32 HIV-resistance allele
 Problem: How long has a HIV resistance allele existed in historical human populations
 Goal: qPCR allele typing of European populations at different time points
- Ancient DNA and paleoprotein investigation of dairying and the evolution of Swiss diet
 Problem: Lactose tolerance and its evolution relative to dairying is not well known
 Goal: SNP typing of the European lactase persistence allele; biomolecular analysis of dietary remnants recovered from ancient teeth
- Iranian Salt Mummy Project
 Problem: The origin of the mummified miners found in an Iranian salt mine are unknown
 Goal: Ancestry analysis and functional gene typing of Iron Age miners spanning 1000 years in time
- Dental Calculus Project
 Problem: Dental calculus contains a diverse range of bacterial and dietary remnants, but it is unknown if DNA or proteins preserve within the mineralized biofilm
 Goal: Determine if dental calculus is a reliable reservoir of biomolecular information about past health, disease, and diet

- Ascertaining the microbiome preservation from naturally preserved archaeological soft tissues from the Peruvian Andes
Problem: The ancient microbiome and its best diagnostic retrieval is hardly known
Goal: To analyze and interpret the molecular findings from the selected ancient samples
- Using high-throughput sequencing to investigate the cause of a colonial native Mexican (Mixtec) epidemic
Problem: The molecular cause of many historic epidemics are unknown
Goal: Determining the cause of this specific epidemics by using state-of-the-art genomic methods
- Ancient DNA analysis in the Thulamela remains: Deciphering the migratory pattern of a southern African human population
Problem: Migratory patterns of Iron Age populations is evidenced in the overlapping of cultural practices and lingual similarities, these provide clues to genetic relatedness, however this needs to be clarified
Goal: To determine the genetic proximity of different southern African groups using ancestry specific DNA markers in comparing living people to those of Iron Age individuals

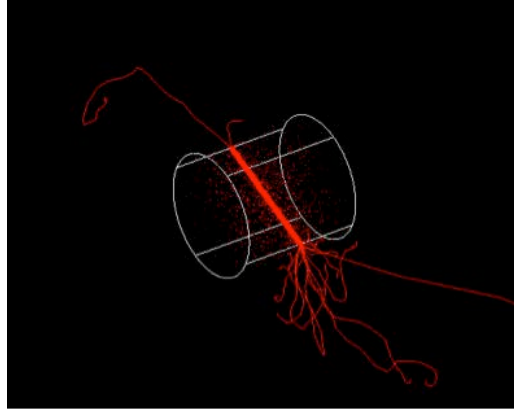
3.2 The Imaging Group

Dr Dr Roger Seiler (Head a.i.)

Dr Lena Öhrström

Christina Sydler, MD thesis student

Johann Wanek, MSc Med Phys, PhD student



Electron tracks in air (long tracks) and in dry phantom tissue (short tracks in cylinder and cells) following simulated X-ray microbeam irradiation.

- Swiss Mummy Project: Various radiological case studies of single mummies (e.g. Iran, Botswana, Switzerland)
 Problem: Unknown pathologies, cause of death etc. in unique single mummies
 Goal: To determine radiologically pathological diagnosis etc. in these individuals
- Swiss Mummy Dental Project: State-of-the-art visualization of dental pathologies
 Problem: Few publications of detailed analysis of mummy dental pathologies exist
 Goal: Multimodality validation of post mortem dental status (mummies, anatomy bodies), correlative assessment of dental findings by CT, Micro-CT and endoscopy
- Dental pathologies of the Neolithic Iceman " Ötzi"
 Problem: Did the Neolithic Iceman have Caries and Periodontitis ?
 Goal: Reevaluation of CT-Scans to prove the dental pathologies
- Radiation efficiency of randomized distributed cell nuclei in different phantom tissues
 Problem: Impact of radiation on mummified tissues is unknown
 Goal: Comparison between simulated cell damage (Monte Carlo simulation) and real irradiation experiments
- CT-based assessment of relative soft tissue alteration in different types of ancient mummies
 Problem: No research addressed mummification specific alteration of tissue shrinkage
 Goal: To analyse shrinking of soft tissue between several types of mummies

- Diagnostic Application of terahertz imaging on ancient mummified tissues
Problem: Very limited experience on applying terahertz-based imaging on ancient tissues
Goal: To evaluate and improve THz imaging systems specifically for mummy investigation
- Comparative CT/MR imaging of ancient mummified tissues
Problem: A single imaging technique is often insufficient for mummy investigations
Goal: Semiquantitative analyses of tissues by multiple MR/CT (DECT) settings

3.3 The Morphology Group

Dr Martin Häusler (Head)

Dr Dr Karl Link

Dr Kaspar Staub

Olia Bolshakova, med. dent. (until 30. June)

Sabrina Meyer, MSc, PhD Student

Sandra Mathews, MSc, PhD Student

Dr Dagmar Dohr

Katja Dageförde, external MD thesis student (University of Münster)

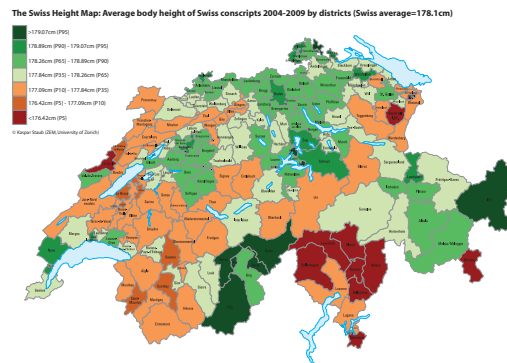
Kara Holloway, external PhD student (University of Adelaide)

Aaron Hermann, external PhD student (University of Adelaide)

Sarah Robertson, external PhD student (Australian National University Canberra)

Andreas Lehmann (1. March until 31. August)

Sabine Landis, MSc student



Regional distribution of body stature in Switzerland

- Multimodality study of ancient mummified brains

Problem: Naturally mummified brain tissue is rare and hardly ever analysed.

Goal: Histological, GC-MS, micro-CT and micro-MRI analysis of mediaeval brains and evaluation of the level of tissue-specific preservation

- Histology analyses of a mammoth and the Iranian Salt mummies

Problem: Ice mummies and salt mummies are valuable rarities and seldom discovered

Goal: To determine the tissue and mummification-specific preservation of multiple samples from the mammoth baby «Lyuba» and ancient Iranian Salt mummies

- Galler pathological bone reference series database

Problem: Historical pathology bone reference series are rare

Goal: To complete an online database and to study various bone pathologies, e.g. manifestation of tuberculosis in the pre-antibiotic and post-antibiotic period

- Swiss Biological Standard of Living - study of Swiss Armed Forces conscripts 1875-2013
Problem: Impact of body shape, socio-economic factors or deficiencies is not well known
Goal: To analyse etiologically secular trends of BMI, stature and body shape
- Secular trend, regional and socio-economic differences in height, BMI and body shape in German conscripts 1956-2010
Problem: Short term alteration of body measures in young Germans are hardly known
Goal: To describe influencing factors of body shape in the selected samples
- Evolution of bipedal locomotion and in particular its relationship to functional morphology and pathologies
Problem: Medical disorders related to bipedal posture are hitherto only partially investigated
Goal: To describe morphological factors influencing the prevalence of bipedalism
- Evolutionary background of pathologies of the human shoulder girdle, knee and spine
Problem: The major human evolution compromised to an unknown degree to the morphology
Goal: To analyze the degree of adaptation of major human joints to needs of contemporary lifestyle

3.4 The Basic Research Group: Paleopathology, History and Ethics

KD Dr Thomas Böni (head), co-head ZEM and research associate

Michel Habicht, MA (from 1. August)

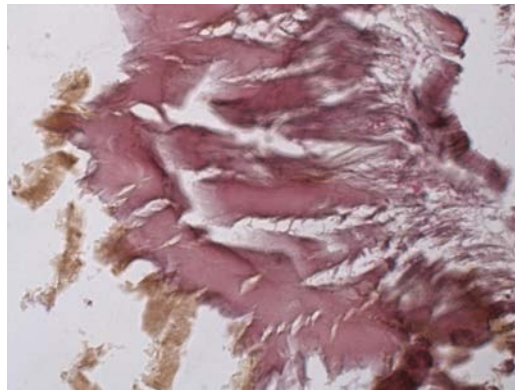
Dr Dr Roger Seiler

Dr Urs Leo Gantenbein, research associate

Dr Philipp Gruber, research associate

Dr Ina Kaufmann, research associate

Bettina Kreissl Lonfat, lic. phil. (until 31.July)



Suggested human abdominal muscle tissue derived from canopic jar content (HE staining)

- Clinical Paleopathology Group

Problem: In Switzerland there is a lack of medical interpretation of paleopathological finds

Goal: To provide basic medical consultancy to anthropologists and archaeologist in interpreting historic human pathological remains

- Historic aspects of mummy research

Problem: There is a lack of research on various historic aspects of mummy research

Goal: To investigate various aspects of mummy research with a particular focus, such as on Paracelsus work, Kirchers work, Mumia vera aegyptiaca etc.

- Canopic Jar Project

Problem: Ancient Egyptian Jars with their content of mummified intestines have hardly ever been examined, particular on a molecular level

Goal: To investigate by Egyptological, radiological and molecular techniques various canopic jars from European collection to investigate kinship and possible pathologies

- Ethics and Research with human remains

Problem: A clear "code of ethics" for ancient mummy research is lacking

Goal: To update the ZEM code of ethics / ethical framework

3.5 Administration and Support

Project Manager Mummy exhibition: Dr Isabel Klusman (until 31. January)

Secretary: Bettina Kreisl Lonfat, lic. phil. (until 31.July) and Lena Öhrström (1.May until 31.July)

Finance controlling: Marc Steinmann (from 15. March)

International research associates:

Dr Maria Ines Hofmann, Chile

Dr Arthur Saniotis, Australia

Dr Christina Warinner, USA (from 1. September)

Dr Ina Kaufmann, Germany

General ZEM support by Institute of Anatomy UZH

HR-secretary: Marianne Ott

Photographer: Heinz Sonderegger

Histology technician: Charlotte Burger

IT-responsible: Christoph Fellner (until 31. January); Savino Jossi (Institute of Anatomy, from 1. March)

4 The Facilities



Dr Warinner working in the ancient DNA clean lab

4.1 New Offices

The ZEM was able to acquire a total of several newly constructed and newly refurbished office rooms on the Y 42 G- Floor, a.o. one dedicated to the PhD students and a combined one for ZEM meetings and Frank Rühlis office. Also, a common room where members of the ZEM can read the latest scientific journals or prepare and eat their lunch was established.

4.2 The aDNA Clean Lab

The Clean Lab that was constructed in collaboration with the Swiss Science Foundation (SNF) in 2010, is a state-of-the-art laboratory for the extraction and analysis of ancient DNA from historical samples such as bone, mummified tissue or coprolites. More technical equipment has been installed in the aDNA Clean Lab during 2012.

As part of the molecular group facilities, the ZEM also co-funded a high accuracy mass spectrometer, which is located at the Functional Genomic Centre UZH.

4.3 The Dry Specimen Storage Room

The Centre for Evolutionary Medicine houses a couple of important research collections (bone samples, mummies, histological slides etc.). The dry specimen storage room was moved to a new place during 2011 and is now fully equipped, e.g. with two computer workstations and a large stock of excavation tools. More samples (loans and permanent donations) such as mummy parts or skeletal samples have been gathered during 2012.



Storage area e.g. for the Galler bone pathology reference series

4.4 The Clinical Anatomy Skills Lab



New infrastructure such as fully ventilated dissection tables

The Clinical Anatomy Skills Lab was inaugurated in 2011. It is a joint facility of the Division of Gross Anatomy and the Centre for Evolutionary Medicine (ZEM). The Skills Lab's main goal is to offer an environment where clinicians can access the Institute's body donations in a controlled environment and where they can establish and train new surgery protocols, attend postgraduate education in clinical anatomy or perform research.

The ZEM regularly uses the Clinical Anatomy Skills Lab to host local and international visitors who are interested in working on modern and ancient human corpses for scientific purposes. For example, in 2012 Dr Schmutz from the Queensland University of Technology (thanks to a SNF international short visit grant) came to study the variability of human femur shape for possible implant designs.

4.5 The New Dry and Wet Lab



These rooms were gradually moved into towards the end of the year 2011 and are fully operational since mid 2012. They serve as the main areas to cut, dissect and further analyse dry and wet tissue samples, respectively. For a long period of time during 2012 e.g. the dry lab was used to lay out three unidentified skeletons from the Arth-Goldau Landslide 1806 catastrophe.

5 Past dates with ZEM participation



Roger Seiler presenting data of the oral pathologies of “Ötzi”,
19th European meeting of the Paleopathology Association
Lille, August 2012

Members of the ZEM presented their scientific work at various conferences in 2012, the most important ones were the following:

22-25 March: **Tuberculosis Evolution conference series, Jubilee Publication on the 75th Anniversary of Albert Szent-Györgyi's Nobel Prize Award**, Szeged, Hungary (Dr Abigail Bouwman)

23-26 March: **107th Annual Meeting of the Anatomische Gesellschaft**, Frankfurt am Main, Germany (Dr Natallia Shved)

11-14 April: **81st Annual Meeting of the American-Association-of-Physical-Anthropologists**, Portland, Oregon, USA (Dr Martin Häusler)

18-22 April: **Society for American Archaeology meetings**, Memphis, TN, USA (Dr Christina Warinner)

13. June **International Conference on Evolutionary Medicine**, University of Vilnius, Lithuania (Prof F. Rühli)

15-18 August: **Fifth International Symposium on Biomolecular Archaeology**, Beijing, China (Dr Abigail Bouwman)

21-25 August: **26th Conference of European Comparative Endocrinologists (CECE)**, Zurich, Switzerland (Prof Frank Rühli, Dr Karl Link, Dr Kaspar Staub, Dr Thomas Böni, Dr Natalia Shved)

26-29 August: **The 19th European Meeting of the Paleopathology Association**, Lille, France (Dr Roger Seiler, Prof. Frank Rühli, Dr Karl Link)

29-30 August "**Paleopathology in Egypt and Nubia - A Century in Review**"; The Natural History Museum, London (Prof F. Rühli, Dr R. Seiler)

5-6 October, **Archaeological Sciences of the Americas Symposium**, Nashville, TN, USA (Dr Christina Warinner)

15-19 October: **39th annual meeting of the European Radiation Research Society**, Vietri sul Mare, Italy (Dr Johann Wanek)

Past dates with ZEM participation

6 Missions and Affiliations



At the end of November 2012 Kaspar Staub, Joel Floris and Frank Rühli travelled to Rome to collect historic and modern body measurements of the Papal Swiss Guard in the Vatican.

Major missions members of the ZEM are incorporated with:

Due to local turbulent situations in some of the countries selected missions have been shortened/cancelled in 2012.

Chehrabad Saltmummy and Saltmine Exploration Project (Iran) (Prof Frank Rühli and other members of the ZEM)



www.saltmen-iran.com

The multidisciplinary analyses of an ancient Salt mine is a collaboration of the Deutsches Bergbaumuseum (Prof. Th. Stöllner), the Institute of Archaeological Studies in Bochum, the Universities of Oxford and York (UK), the Cultural Heritage, Tourism and Handcraft Organisation of Zanjan, Iran.

The Leiden Excavations in the New Kingdom necropolis at Saqqara (Egypt) (Prof Frank Rühli)

This is a joint excavation, documentation and preservation project of monuments in a cemetery area of important New Kingdom officials under the lead of Rijksmuseum van Oudheden at Leiden (NL) as well as the Department of Egyptology of the Leiden University (Dr M. Raven).

www.saqqara.nl

University of Basel Kings' Valley project

This is an excavation project lead by the Egptological Seminar (Prof. S. Bickel) of the University of Zurich. The main goal is the exploration of undecorated tombs next to the one of Thutmosis III (KV 34). As part of this mission in 2011/2012 a new tomb, KV 64, has been discovered. This was the first

ever, new burial tomb discovery since the 1920's (Tomb of Tutankhamun). Prof Frank Rühli is part of this mission as an expert for the investigations of the human remains. Besides macroscopic inspection, examinations with portable x-ray are undertaken (collaboration with Prof Salima Ikram, American University Cairo).



Traditional development of x-ray images from in situ imaging of human remains at the valley of the Kings, Luxor Hospital Egypt (image: S. Ikram)

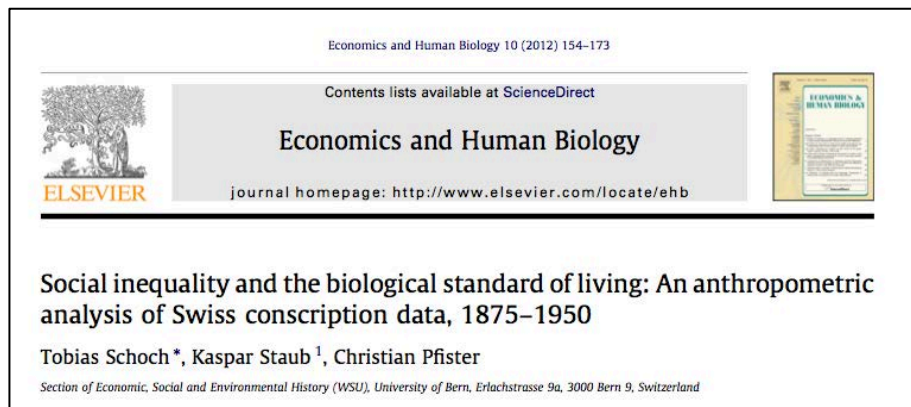
Dental Calculus Project

In 2012, a large multicentric study on the value of dental calculus for oral health (microbiome) and diet analyses has been established by Dr Tina Warinner and other members of the ZEM. The collaboration involves e.g. scientists from Switzerland, Denmark and UK.

Members of the ZEM are also affiliated to these institutions:

- **Zentrum für Integrative Humanphysiologie, UZH** (Prof. Frank Rühli)
- **Kompetenzzentrum Mediävistik UZH** (Prof. Frank Rühli, KD Thomas Böni, Dr Urs Leo Gantenbein, Dr Roger Seiler)
- **Kompetenzzentrum Medizin, Ethik Recht Helvetiae, UZH** (Prof. Frank Rühli)
- **Indian Institute of Morphology, Calcutta** (Prof. Frank Rühli)
- **Department for Human Evolutionary Biology, Harvard University** (Prof. Frank Rühli)

7 Publications



One of the ZEM publications in 2012

7.1 Original Papers

Aali A, Abar A, Boenke N, Pollard M, **Rühli F**, Stöllner T.

Ancient salt mining and salt men: the interdisciplinary Chehrabad Douzlakh project in north-western Iran.

Antiquity 2012, 86: 333

Baek JH, D'Agnillo F, Vallelian F, Pereira CP, Williams MC, Jia Y, **Schaer DJ**, Buehler PW.

Hemoglobin-driven pathophysiology is an in vivo consequence of the red blood cell storage lesion that can be attenuated in guinea pigs by haptoglobin therapy.

J Clin Invest. 2012 Apr 2;122(4): 1444-58.

Schoch T, **Staub K**, Pfister C.

Social inequality, the biological standard of living, and body shapes. An analysis of Swiss conscription data 1875-1950.

Econ Hum Biol 2012, 10(2): 154-173.

Aali A, Stöllner T, Abar A, **Rühli F**.

The Salt Men of Iran: The Salt Mine of Douzlakh, Chehrabad.

Archäol Korrespondenzblatt 2012, 42:61-81.

Bianucci R, Brothwell D, van der Sanden W, Papageorgopoulou C, Gostner P, Pernter P,

Egarter-Vigl E, Maixner F, Janko M, Piombino-Mascali D, Mattutino G, **Rühli F**, Zink A.

A possible case of dyschondrosteosis in a bog body from the Netherlands.

Journal of Archaeology in the Low Countries 2012, 4:1.

Staub K, Woitek U, Pfister C, **Rühli F**.

Overview over 10 years of anthropometric history in Switzerland: The secular trend, regional and socioeconomic differences in body height and shape since the 19th century.

Bulletin der Schweizerischen Gesellschaft für Anthropologie 18(2): 37–50.

Hermanussen M, **Staub K**, Assmann C, van Buuren S.

Dilemmas in Choosing and Using Growth Charts.

Pediatric Endocrinology Reviews 2012, 9: 650-656.

Häusler M, Schiess R, **Boeni T**.

Modern or distinct axial bauplan in early hominis? A reply to Williams (2012).

J Hum Evol 2012, 63: 557-559.

Henneberg M, **Saniotis A**.

How can evolutionary Medicine inform future personalized medicine?

Personalized Medicine, 2012, 9(2): 171-173.

7.2 Published Abstracts and Presentations

Published abstracts

Haeusler M.

Traumatic spinal injury in the KNM-WT 15000 Homo erectus skeleton.

*Am J Phys Anthropol Suppl.*2012; 54p. 157-158.

Haeusler M, Schiess R, **Boeni T**.

Evolutionary adaptations of the hominid vertebral column.

Proc Europ Soc Hum Evol 1:95.

Haeusler M, Schiess R, **Boeni T**.

Facet joint subluxation indicating possible disc herniation in juvenile Homo erectus skeleton.

19th European Meeting of the Paleopathology Association, Lille, France, August 27 - 30, 2012.

Publications

Hermanussen M, Assmann C, **Staub K**.

Der 'Community Effect' in der Endgrösse.

Proceedingband 2012, 10. interdisziplinärer SGA-Workshop 2012;p. 280-281

Hermanussen M, Assmann C, **Staub K**.

The 'Community Effect' in growth regulation.

American Journal of Human Biology 2012; 24 (201-217) p.227.

Hermanussen M, Assmann C, **Staub K**.

The 'community effect' in growth regulation.

Annals of Human Biology 2012; 39 (5) p.449.

Holloway KL, Link K, Rühli FJ, Henneberg M.

Surviving tuberculosis: healing of skeletal lesions during the recovery from active disease.

Am J Phys Anthropol. 2012; 147:54; p.166-166.

Meyer S, Reichlin T, Häusler M.

Skelettfunde aus Harmettlen, Arth-Goldau, Opfer des Bergsturzes von 1806

Perreard G, editor. Réunion annuelle de la SSA/SGA et de l'AGHAS, Genève, 10 novembre 2012. Genève. p 5

Staub K, Floris J, Bogin B, Woitek U, Pfister C, Rühli F.

From growth in height to growth in breadth: The changing body in Switzerland since the 19th century.

Annals of Human Biology 2012; 39 (5) p.458.

Staub K, Woitek U, Pfister C, Rühli F.

Überblick über fast zehn Jahre Forschung durch die Historische Anthropometrie in der Schweiz seit 2002: Säkularer Trend sowie soziale und regionale Unterschiede in der mittleren Körperhöhe und der Körperform seit dem Beginn des 19. Jahrhunderts.

Bulletin der Schweizerischen Gesellschaft für Anthropologie 2012; 18 (1), in press

Wanek J, Speller R, Royle G, Rühli F.

Human mummification process and their impact on cell radiosensitivity: Computed Tomography model of Monte Carlo radiosensitivity: Computed Tomography model of Monte Carlo simulation.

Abstract Book; 39th annual meeting of the European Radiation Research Society, Vietri sul Mare, Italy, 2012

Presentations (in addition to the above listed conference presentations)

Akgül G, Link K, Baroiller J-F, Eppler E, Reinecke M.

Are ANP and BNP involved in piscine osmoregulation?

26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Allio I, **Link K, Eppler E.**

Pancreatic immunohistochemical changes observed in hyperglycaemia and diabetes mellitus of the cat.

26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Baghdadi-Serrano N, **Shved N, Link K, Eppler E.**

Investigation of IGF-I, IGF-II, GHR and TNF-alpha Gene expressions in immune organs of the black-chinned tilapia, Sarotherodon melanotheron under freshwater and seawater conditions.

26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Berishvili G, **Shved N, Link K, D'Cotta H, Baroiller J-F, Eppler E, Reinecke M.**

Salinity changes affect the brain-pituitary-gonad axis of tilapia.

107th Annual Meeting of the Anatomische Gesellschaft, Frankfurt am Main, Germany, 23-26 March 2012

Bouwman A, Warinner C, Link K, Rühli F.

The importance of sequencing: A case study of tuberculosis amplification from 20th century skeletal remains.

The 19th European Meeting of the Paleopathology Association, Lille, France, 26-29 August 2012

Publications

Dageförde K, **Rühli F.**

Evidence based Paleopathology: Meta-Analysis of PUBMED®-listed scientific studies on Pre-Columbian, South American Mummies
The 19th European Meeting of the Paleopathology Association, Lille, France, 26-29 August 2012

Eppler E, **Link K**, Berishvili G, **Shved N**, DèCotta H, Baroiller J-F, Reinecke M.

Seawater and freshwater challenges affect the GH/IGF-system of tilapia in different physiological systems.

Union of Swiss Societies for Experimental Biology (USGEB) Annual Meeting, Lausanne, Switzerland, 6-7 February 2012

Franz A.-C., **Link K**, **Shved N**, Eppler E.

Insulin-like growth factor (IGF)-I and estrogen receptor (ER)- alpha in channel catfish B- and T-lymphocytes: an in vitro approach using cell lines.

26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Hermanussen M, Assmann C, **Staub K.**

Der peer-group-Effekt auf das Wachstum von Kindern und Jugendlichen

Potsdam, Germany, 19.6.2012

Hermanussen M, Assmann C, **Staub K.**

The 'community effect' in growth regulation (an evolutionary approach)

Int. Conference Evolutionary Medicine, Vilnius, Lithuania, 13.6.2012

Hermanussen M, Assmann C, **Staub K.**

Determinants of Final Heights.

37th Annual Meeting Human Biology Association, Orlando, USA, 23.4.2012

Holloway KL, Link K, Rühli F, and Henneberg M.

Surviving tuberculosis: healing of skeletal lesions during the recovery from active disease.

81st Annual Meeting of the American-Association-of-Physical-Anthropologists, Portland, Oregon, USA, 11-14 April 2012

Holloway KL, Bouwman AS, Link K, and Rühli F.

Changes in the disease profile of tuberculosis during the introduction of antibiotics ñ a study of Swiss pathological skeletal samples.

Tuberculosis Evolution conference series, Jubilee Publication on the 75th Anniversary of Albert Szent-Györgyi's Nobel Prize Award, Szeged, Hungary" 22-25 March 2012

Horackova L, **Rühli, F.J.**

A case of parietal temporomandibular joint ankylosis from a new kingdom necropolis

"Paleopathology in Egypt and Nubia - A Century in Review; The Natural History Museum, London, England", 29.-30.08.2012

Lehmann A, Woitek U, Rühli F, Staub K.

German conscripts: an anthropometric update- The situation in 2010 and a short regional overview

19th Aschauer Soiree, Aschauhof, Germany, 17.11.2012

Lindsay K. (with contribution from Rühli, F.J.)

Revealing the face of an ancient Egyptian

67th annual Meeting of Medical Illustrators, Toronto, Canada, 25.-28.July 2012

Link K, Papageorgopoulou C, Gutteck U, Müller D, **Rühli F**, Van Hove M-L, Bianucci R.

Chemical, radiological and histological investigations of mediaeval mummified brains found in Belgium.

The 19th European Meeting of the Paleopathology Association, Lille, France, 26-29 August 2012

Link K, Dohr D, Rühli F.

The Galler pathological human bone collection and database.

The 19th European Meeting of the Paleopathology Association, Lille, France, 26-29 August 2012

Link K, Eppler E.

Influence of hyperglycaemia and diabetes mellitus on feline pancreatic islet cells.

26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Publications

Meyer S, Schmid P.

The Functional Morphology of the Hominid Fibula
ESHE, Bordeaux, 21-22.09.2012

Öhrström L, Bitzer A, Walther M, Fischer B and Rühli F.

Terahertz imaging of ancient mummies
Advanced Electromagnetics Symposium, Paris – France, 16-19 April 2012

Öhrström L, Bitzer A, Walther M, Fischer B and Rühli F.

Terahertz imaging techniques for ancient Egyptian mummified objects
The 19th European Meeting of the Paleopathology Association, Lille, France, 26-29 August 2012

Öhrström L, Bitzer A, Walther M, Fischer B and Rühli F.

Terahertz imaging techniques for ancient Egyptian mummified objects
2012 Annual CIMST Meeting, ETHZ, Zürich, 3. September 2012

Rühli F, Warinner T, Bouwman A, Sheved N

Evolutionary Medicine: Ancient DNA, mummies and clinical perspectives
FGCZH Joining Forces Symposium, ETH Zurich, Switzerland, 22. June 2012

Rühli F.

Kurzpräsentation: Zentrum für evolutionäre Medizin
Treffen der SNGA, Zürich, Schweiz, 8. June 2012

Rühli F.

Neues vom Oetzi - ist er verblutet?
6. Jahrestagung der Gesellschaft für Thrombose- und Hämostaseforschung, St. Gallen, Schweiz, 3. February 2012

Rühli F

Evolutionary Medicine, Mummies and conscripts
Department of Anthropology, Moscow State University, 18. April

Rühli F.

Evolutionary Medicine: Socio-economic and clinical perspectives of human changes
Institut für Sozial- und Präventivmedizin / Universität Bern 8. November 2012

Rühli F.

Woran starb Tutanchamun? Evolutionäre Medizin: Forschung an Mumien und Skeletten
Urania, Berlin, Germany, 30.05.2012

Rühli F

Clinical and socioeconomic impact of evolutionary medicine
26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Rühli F

Evolutionäre Medizin: Fieber und andere Krankheiten...
UniversitätsSpital Zürich, 24.10.2012

Rühli F.

Was wir von Mumien lernen können
Alumi HSG, 31.05.2012

Rühli F.

Extreme Zeiten: Mumien und ihre Bedeutung für die medizinische Forschung
Jahreskongress SCNAT, Interlaken, Schweiz, 28. October 2012

Rühli F.

Evolutionary Medicine: Ancient Mummies and More...
Meeting/Workshop "Mummies, Bones, and Ancient Pathogens" Stintino, Sardinia, Italy, 07.- 08. September 2012

Rühli F.

Evidence-based paleopathology: How bones and mummies can really teach the living
19th European meeting of the paleopathology association, Lille, France, 27.-29. August 2012

Seiler R, Rühli F.

A case of parietal thinning in a third intermediate periode (ca. 1070 BC to 664 BC) Egyptian Mummy
Paleopathology in Egypt and Nubia - A Century in Review; The Natural History Museum, London, England, 29.-30. August 2012

Seiler R, Zink A and Rühli F.

Periodontitis of the Neolithic Iceman (3300 B.C): clinical aspects and aetiological considerations.
The 19th European meeting of the paleopathology association. Lille, France, 26-29 August 2012

Shved N, Haas C, Warinner C, Papageorgopoulou C, Rühli F.

DNA preservation under experimental human tissue mummification
107th Annual Meeting of the Anatomische Gesellschaft, Frankfurt am Main, Germany, March 23-26, 2012

Shved N, Berishvili G, Link K, DèCotta H, Baroiller J-F, Reinecke M and Eppler E.

Salinity changes affect the GH/IGF axis in different organs in tilapia (*Sarotherodon melanotheron*).
26th Conference of European Comparative Endocrinologists (CECE), Zurich, Switzerland, 21-25 August 2012

Staub K, Woitek U and Rühli F.

From growth in height to growth in breadth: The changing body shape of the Swiss conscripts since the 19th century and possible endocrine explanations
19th Aschauer Soiree, Aschauhof, Germany, 17. November 2012

Staub K, Woitek U and Rühli F.

Medizinische und soziökonomische Forschung mit Schweizerischen Rekrutierungsdaten: BMI, Übergewicht, Adipositas.
Bundesamt für Gesundheit, Bern, Schweiz, 12 January 2012

Staub K, Pfister C, Woitek U and Rühli F.

Vom Längen- zum Breitenwachstum: Veränderungen der Körperform in der Schweiz seit dem 19. Jahrhundert. Überblick über fast 10 Jahre
Forschung durch die Historische Anthropometrie in der Schweiz seit 2002
Institute of History in Medicine, University of Bern, Bern, 12 February 2012

Staub K.

Medical and socio-economic research with historical and modern Swiss Army conscription data: Differences in height, BMI and body shape 1875-2011
Lunchtime Seminar at the Institute for Social- and Preventive Medicine ISPM, University of Bern, Bern, Mai 2012

Staub K, Woitek U, Rühli F.

Möglichkeiten medizinischer und sozioökonomischer Forschung mit anthropometrischen Daten der FIFA
Home of FIFA, Zürich, July 2012

Staub K, Woitek U, Rühli F.

From growth in height to growth in breadth: The changing body shape of the Swiss conscripts since the 19th century and possible endocrine explanations
26th Conference of European Comparative Endocrinologists (CECE), Zürich, August 2012

Staub K, Rühli F, Floris J, Woitek U

Does evolutionary medicine also have a socio-economic relevance? On-going projects and two new approaches with potential...
Lehrstuhlwochenende Prof. Woitek, Crestasee, 9.-11- Juli 2012

Staub K.

Warum werden wir grösser und dicker. Entwicklungen in der Körpergrösse und im Gewicht in der Schweiz seit dem 19. Jahrhundert als Spiegel sich verändernder Lebensbedingungen.
Scientifica 2012, Zürich, August 2012

Wanek J, Speller R, Rühli F.

Human Mummification Process and their Changes in Morphology: From Dual Computed Tomography to Synchrotron Microscopy
2012 Annual CIMST Meeting, ETHZ, Zürich, 3.September 2012

Wanek J, Speller R, Royle G, Rühli F.

Human mummification process and their impact on cell radiosensitivity: Computed Tomography model of Monte Carlo radiosensitivity: Computed Tomography model of Monte Carlo simulation
39th annual meeting of the European Radiation Research Society, Vietri sul Mare, Italy, 15-19 Oct. 2012

Warinner C, Rodriguez J, Vyas R, Trachsel C, Shved N, Radini A, Hancock Y, Grossmann J, Samaniego J, Charlton S, Kawai T, Eppler E, Seiler R, Luder H, Fiddyment S, Teoh K, Von Mehring C, Collins M, Gilbert T, Rühli F, Cappellini E.

Dental Calculus: A Novel Biomolecular Reservoir for Paleopathology and Paleodietary Inquiry
Archaeological Sciences of the Americas Symposium in Nashville, TN, USA, 5-6 October 2012

Warinner C, Rodriguez J, Vyas R, Trachsel C, Shved N, Radini A, Hancock Y, Grossmann J, Samaniego J, Charlton S, Kawai T, Eppler E, Seiler R, Luder H, Fiddyment S, Teoh K, Von Mehring C, Collins M, Gilbert T, Rühli F, Cappellini E.

Biomolecular Approaches to Recovering Health and Dietary Information from Ancient Dental Calculus
Fifth International Symposium on Biomolecular Archaeology in Beijing, China, 15-18 August 2012

Warinner C, Cappellini E, Samaniego J, Shved N, Seiler R, Luder H, Radini A, Teoh K, Trachsel C, Collins M, Gilbert T, Rühli F.

Dental Calculus: A novel biomolecular reservoir of ancient dietary and health indicators.
Society for American Archaeology meetings in Memphis, TN, USA, 18-22 April 2012

Wenger M, Shved N, Akgül G, Nakayama-Casanova A, Segner H, Eppler E.

Estrogen effects on the GH/IGF-system and on cytokines in immune organs of yersinia -exposed rainbow trout (*Oncorhynchus mykiss*)
Anatomische Gesellschaft 107th Annual Meeting Frankfurt am Main, 23-26 March 2012

7.3 Book Chapters

Wanek J, Papageorgopoulou C, Rühli F.

Fundamentals of Paleoimaging Techniques: Bridging the Gap between Physicists and Paleopathologists.
In: Grauer AL (ed). A companion to Paleopathology. Blackwell, Chapter 18. 2012: 324-339.

Gruber P, Böni T, Rühli F.J.

History of Paleopathology in Switzerland.

In: Buikstra JE, Roberts CA, Schreiner SM. (eds.) The Global History of Palaeopathology: Pioneers and Prospects. New York and Oxford: Oxford University Press, May 2012.

Papageorgopoulou, C.; **Staub, K.; Rühli, F.J.**

Hypothyroidism in Switzerland from an anthropological, clinical and historic perspective.

In: Harbeck M, Heyking v. K, Schwarzberg H

(eds.) *Sickness, Hunger, War and Religion*. Rachel Carson Center Perspectives 2012(3) p 75-91

Rühli F.J.

Imaging: the history of radiography, current issues and future trends.

In: Buikstra JE, Roberts CA, Schreiner SM. (eds.) The Global History of Palaeopathology: Pioneers and Prospects. New York and Oxford: Oxford University Press, May 2012.

7.4 Editorships

Editor Anthropologischer Anzeiger / Journal of Clinical and Biological Anthropology (Prof Frank Rühli)

Editor Swiss Review of Military and Disaster Medicine (Prof Frank Rühli)

Editor HOMO / Journal of Comparative Human Biology (Prof Frank Rühli)

Associate Editor International Journal of Paleopathology (Prof Frank Rühli)

Associate Editor Yearbook of Mummy Studies (Prof Frank Rühli)

Associate Editor Journal of Evolutionary Medicine (Prof Frank Rühli)

8 Other activities



Part of the ZEM-team during the retreat days in Castasegna (Grisons, CH) in October 2012

Members of the ZEM contributed to various activities and events during the reporting period, some major ones are listed here exemplary:

Childrens University UZH

Dr Karl Link and Prof Frank Rühli offered a lab course to school children age 10-12 about mummies and mummy research

Scientifica

This time the slogan of the Scientifica exhibition was “Get healthy - stay healthy”. Various members of the ZEM participated at the large science exhibition of the UZH to answer the question “Healthier - bigger - thicker?”



The ZEM booth at the Scientifica

Academic teaching activities (UZH and external):

Prof. Frank Rühli

Anatomy (clinical anatomy dissection course, lectures on locomotor system) 1st and 2nd year Medicine (Medical Faculty, UZH)

Biomedical imaging (lectures), Science Faculty UZH

Paleopathology (general course, Medical Faculty, UZH)

Dr Karl Link

Clinical Anatomy (dissection course) 2nd year Medicine (Medical Faculty; UZH)

Histology (courses) 2nd year Medicine (Medical Faculty, UZH)

Course Evolution and Human Health (Medical Faculty, University of Adelaide)

Dr Roger Seiler

Paleopathology (general course, Medical Faculty, UZH)

Dr Kaspar Staub

Introduction to Statistics for historians (Institute of History, University of Bern)

Quantitative Methods in Economic History (Economics Faculty; UZH)



Building of the University of Adelaide

Full-semester course in Evolutionary Medicine

In 2012 the undergraduate course “Evolution and Human Health” at the Medical Faculty of Adelaide was launched. Circa 20 students chose this four-hour-a-week module, which is the first of its kind in Australia. The course coordinator is the international ZEM collaborator Prof Maciej Henneberg, other staff involved in delivering the course content are Prof. Frank Rühli, Prof. Anna Chur-Hansen – (Discipline of Psychiatry, School of Medicine, Adelaide) and another international collaborator of the ZEM, Dr Arthur Saniotis.

International visits:

Among others the following people visited the ZEM during the reporting period:

Bogdan Solomon, MD, Orthopedic Surgeon, Orthopaedic & Trauma Service, Adelaide

Beat Schmutz, BSc, PhD, Institute of Health and Biomedical Innovation, Queensland

Katherine Van Schaik, Harvard University, Cambridge

Robert Loynes, MD, Centre for Biomedical Egyptology, Manchester

Prof. Sylvia Kirchengast, Department of Anthropology, University of Vienna"

Academic mandates:**Prof. Frank Rühli**

Member Commission "Teaching", Medical Faculty UZH

Vice-President Swiss Society of Anthropology

Member PhD Program in Integrative Molecular Medicine

Member PhD Program in Evolutionary Biology

Awards:**Dr Christina Warinner**

TED (Technology, Entertainment and Design) Fellowship

Peer-reviewer for academic journals and grant bodies:**Prof. Frank Rühli**

Advances in Anthropology

American Journal of Human Biology

Anatomical Sciences Education

Antiquity

British Medical Journal

European Journal of Pediatrics

Journal of Anatomy

Journal of Archaeological Science

Journal of Egyptian Archaeology

Journal of Vertebrate Paleontology

Swiss Medical Weekly

Other activities

NMNH Scientist Smithsonian

Forschungsgemeinschaft Autonome Provinz Bozen

Croatian Science Foundation

Deutsche Forschungsgemeinschaft

Schweizerischer Nationalfonds

Dr Christina Warinner

Proceedings of the Royal Society B (Biological Sciences)

PNAS

Deutsche Forschungsgemeinschaft

Dr Kaspar Staub

Journal of Biosocial Science

Anthropologischer Anzeiger

Dr Abigail Bouwman

Journal of Archaeological Sciences

Dr Martin Häusler

Science

Journal of Evolutionary Medicine

Bull Mém Soc Anthropol Paris

Journal of Anatomy

Journal of Human Evolution

Other academic activities

Prof. Frank Rühli

Elected by the UZH University board to Professor of Anatomy (aoProf ad personam, starting 1.8.2012)

Symposium "Evolutionary medicine: what can we learn from the past?"

Co-Chairs: Frank J. Rühli (Switzerland), Sylvia Kirchengast (Austria)

26th Annual Meeting of the European Society for Comparative Endocrinology (ESCE)

Expert (Schnittstellengesprächspartner) Evaluation Department of Prehistory UZH

Member of various Thesis committees (MD, PhD)

9 Press reports



Report about ZEM research on famous Swiss historic personality Jürg Jenatsch

Print/Online reports about ZEM members / activities:

Berner Zeitung, 13.01.2012
SciencNow, 29.02.2012
Uniforschen, 01.03.2012
Mysteries 01.03.2012
Greenpeace Magazin, 01.03.2012
Bild der Wissenschaft, 01.03.2012
Uni'Leben, Die Zeitung der Albert-Ludwigs Universität Freiburg im Breisgau 01.03.2012
Blick am Abend, 15.03.2012
Prisma, 01.04.2012
Kirchenzeitung, 03.04.2012
CNN.com, 20.05.2012
Fox News, 31.05.2012
Wired UK, 01.06.2012
Observer (Guardian, UK), 29.07.2012
Archaeology Magazine, 30.07.12
ArchaeoBlog, 31.07.2012
The last word on nothing, 09.08.12
Der Freitag, 16.08.2012
Beobachter Extra, 01.09.2012
Migros Magazin, 03.09.2012
SDA / Schweizerische Depeschentagentur, 25.10.2012
Blick am Abend, 25.10.2012
SF DRS Vermischtes, 25.10.2012
Die Südostschweiz, 26.10.2012
Tages Anzeiger, 26.10.2012
Der Bund, 26.10.2012
Neue Züricher Zeitung, 26.10.2012
St. Galler Tagblatt, 26.10.2012
Minerva, Nov/Dec 2012
Bündner Tageblatt, 26.10.2012
Blick, 26.10.2012
Die Südostschweiz, 26.10.2012
Der Landbote, 26.10.2012
Züricher Oberländer, 26.10.2012
Züricher Unterländer, 26.10.2012
Zürichsee-Zeitung, 26.10.2012
National Geographic Daily News, 28.12.2012

TV reports:

SRF (Swiss TV): PULS „Was Mediziner von Mumien lernen“, 09.01.2012

RSI LA 1 (Swiss TV): Telegionale sera „Jörg Jenatsch: solo indizi per le spoglie della cattedrale di Coira“, 25.10.2012

SRF (Swiss TV): Einstein „Ist es Jörg Jenatsch DNA?“, 25.10.2012 DRS1 (Swiss Radio):

SRF (Swiss TV): Aktuell „Ist es Jörg Jenatsch?“, 25.10.2012

SRF (Swiss TV): Tagesschau, „DNA-Test kann Jenatsch-Rätsel nicht lösen“, 25.10.2012

BBC TV series on Human Evolution “Prehistoric Autopsy”

Radio reports:

Regionaljournal Ostschweiz (Swiss Radio) „Jörg Jenatsch: DNA-Analyse bringt keine Klarheit“, 25.10.2012

Tele Südostschweiz (Swiss Radio): News Graubünden „Skelett in Churer Kathedrale behält Geheimnis“, 25.10.2012

SRF (Swiss Radio), Regionaljournal, „Jörg Jenatsch: DNA-Analyse bringt keine Klarheit“, 25.10.2012

10 Financial Support



CT scan of a canopic jar at the Institute of forensic medicine (IRM)
University of Zurich

We are most thankful to the enormous support by

the Mäxi Foundation

and the other donors who allow us to run the ZEM as it is.

The following **research grants** were running during the reporting period:

Deutsche Forschungsgemeinschaft (DFG) (co-applicant: Prof Frank Rühli)

Swiss National Science Foundation (R'Equipe; co-applicant: Prof Frank Rühli)

ZHIP cooperative research grant (co-applicant Prof Frank Rühli)

Foundation for Scientific Research UZH / Baugarten Foundation (Prof Frank Rühli)

Novartis Foundation for Biological and Medical Research (Prof Frank Rühli, co-applicants: Dr Tina Warinner, Dr Abigail Bouwmann)

Swiss Foundation for Nutrition Research (Dr Tina Warinner, co-applicants: Prof Frank Rühli, Dr Natallia Shved, Dr Abigail Bouwmann)

Furthermore the **Medical Faculty UZH** thankfully supports the ZEM with an annual **Betriebskredit**. Also, Frank Rühli has been given a substantial **Einrichtungskredit** attached to his professorship.

During 2012 **the following grants have been successfully (co-) acquired** by ZEM people:

University Research Priority Program (UFSP) "Evolution in Action: From Genomes to Ecosystems" (Leaders: Prof. U. Grossniklaus, Prof B. Keller, UZH; Prof Frank Rühli is part of one of six subproject; starting: 1.1.2013, total ca. 5 Mio for 2013-2016)

Schweizerischer Nationalfonds: Live Experiment (Dr. Kaspar Staub, 33'000.-)

Zürcherische Winkelriedstiftung: Militärhistorisches Projekt "Die mittlere Körperhöhe von Frauen in der Armee in Zürich 1940-2011" (Prof F. Rühli, 1'500.-)

Bundesamt für Gesundheitswesen (Themenbereich Ernährung und Bewegung): Regionale und soziale Unterschiede im BMI der Stellungspflichtigen in der Schweiz 2004-2012 (Dr Kaspar Staub, Co-applicant: Prof. Frank Rühli, Prof. Ulrich Woitek; 58'000.-)

Investitionskredit UZH Diamondbandsaw (Prof F. Rühli, 24'500.-)

Highly appreciated **funding for the 2011 / 2012 public mummy exhibition** has been given to Prof Frank Rühli by the following funding bodies:

Mercator Foundation Switzerland

Mäxi Foundation

Göhner Foundation

G+B Schwyzer Foundation

Swiss National Science Foundation

Medical Faculty University of Zurich

Science Faculty University of Zurich

Cogito Foundation

Siemens Healthcare Systems Germany

11 ZEM Goals 2013



Members and affiliates of the ZEM at the summer barbecue event (15. August)

For the coming year we would like to achieve the following major goals:

- **Continue major research projects locally and internationally**
- **Launch teaching module in Evolutionary Medicine at the University of Zurich**
- **Get more rooms for DNA analyses**
- **New research staff appointments (esp. senior staff)**
- **Acquire additional external funding**

Impressum:

Prof Frank Rühli
 Dr Kaspar Staub
 Dr Lena Öhrström
 Sandra Mathews

Zurich, April 2013

For more and the most recent information about the ZEM see also our websites:

www.evolutionarymedicine.ch
www.swissmummyproject.ch

You may also follow us on Facebook and Twitter.

We sincerely thank the Mäxi-Foundation for their most generous support