

VELUX STIFTUNG

ANNUAL REPORT 2016

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THE FOUNDATION

I. MISSION & BACKGROUND

The Velux Stiftung is an independent charitable foundation supporting research projects in the areas of daylight, healthy ageing and ophthalmology. The foundation is active worldwide, and supports innovative projects which generate lasting progress for the benefit of mankind.

The Velux Stiftung was founded 1980 by Villum Kann Rasmussen, a Danish engineer. He developed a novel window construction that could be installed in sloping roofs, which he named "VELUX" ("Ve" for ventilation, and "Lux" for light). In 1941, he started his own company, the V. KANN RASMUSSEN & CO. The company's purpose is the development and manufacturing of efficient constructions for the exploitation of daylight in buildings.

II. BOARD & MANAGEMENT



The foundation board in November 2016.

FOUNDATION BOARD IN 2016

Mr. Kurt Stutz, President

Ms Lykke Ogstrup Lunde, Vice President

Mr. Asger Høeg

Mr. Leif Jensen

Ms Lene Kann-Rasmussen

Mr. Villum Ogstrup-Pedersen

Mr. René Schürmann

By the end of December two long-term members resigned after 18 years and 12 years respectively of being on the foundation board. In a memorable board meeting in November the long-term board member Ms Lene Kann-Rasmussen and the president Mr. Kurt Stutz bid farewell. Ms Lykke Ogstrup Lunde was elected as new president of the board as from 1 January 2017.

MANAGEMENT IN 2016

Mr. Lukas von Orelli, Director

Ms Kirstin Kopp, Scientific Officer

Ms Beatrice Merkli, Back Office

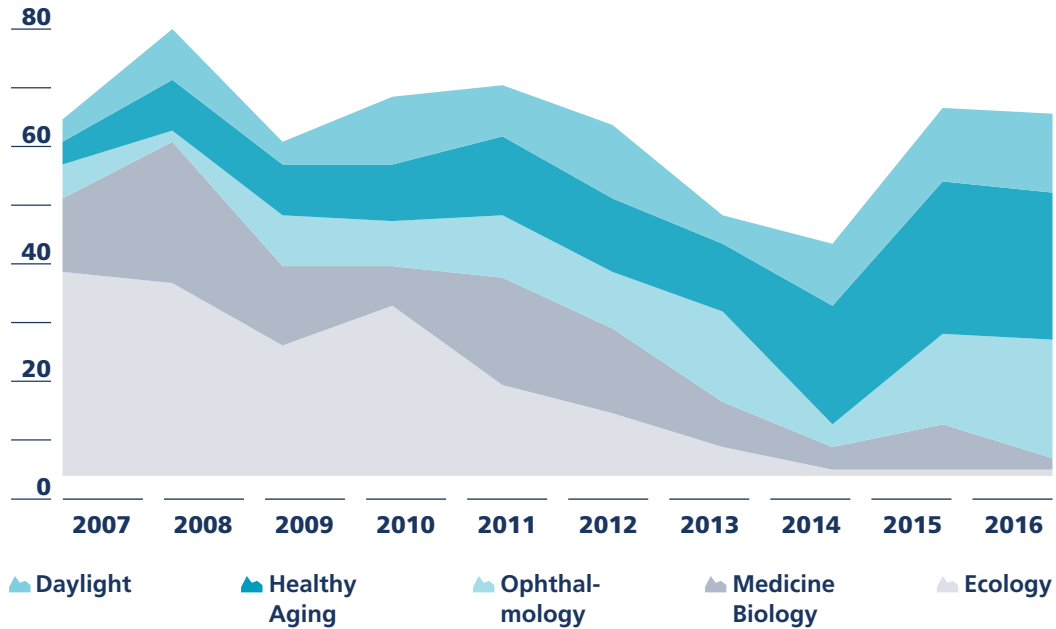
III. STRATEGY & IMPLEMENTATION

More than five years ago, in 2011 the foundation board took a strategic decision: The activities of the foundation were meant to create higher impact. Therefore, the foundation aims to establish an international reputation to attract and fund excellent research with high impact. This resulted in a competitive application procedure, including external peer-review by two international experts and the focus on five funding areas of the foundation's legal purpose.

The five primary scopes are: Daylight research including the three areas Daylight & Human, Daylight & Nature, Daylight & Technology, as well as Healthy Ageing research and Ophthalmology research. After an implementation phase of five years, the management presented an evaluation of the effects of this decision on applications and contributions.

The strategic decision resulted in an increased number of applications in the focus areas (see figure below), and by 2016 all contributions were spent in these areas (see table below). This included external projects and own projects (see also VI. Funding Statistics and VII. Own projects). The number of applications from outside of Switzerland increased (14% in 2007–2011 vs. 21% 2012–2016) and the received applications showed higher scientific quality (as evaluated by the experts: 38% high quality applications in 2007–2011 vs. 52% in 2012–2016).

NUMBER OF APPLICATIONS BY YEAR AND FUNDING AREA



After the strategic focus in 2011 the number of applications (shown on the Y-axis) initially dropped as applications from Ecology and Medicine/Biology started declining. After 2014 the total number of applications gained again due to increased numbers in the primary scopes.

APPROVED AMOUNTS IN THE FUNDING AREAS BY YEAR

	Daylight	Healthy Aging	Ophthalmology	Medicine Biology	Ecology	Total
2007	510,000	515,650	460,000	620,126	1,997,010	4,102,786
2008	356,916	2,886,831	186,331	1,580,248	655,893	5,666,219
2009	726,148	2,020,331	210,000	260,826	200,000	3,417,305
2010	573,400	757,000	242,000	0	1,038,400	2,610,800
2011	745,000	444,000	1,131,000	469,000	200,000	2,989,000
2012	1,036,500	718,450	643,000	642,800	0	3,040,750
2013	383,750	808,000	1,530,550	277,000	0	2,999,300
2014	1,556,500	794,000	0	400,000	0	2,750,500
2015	1,008,800	2,212,800	1,048,000	210,000	0	4,479,600
2016	2,487,185	3,831,000	867,700	0	0	7,185,885

Contributions spent by the foundation by year and funding area. Due to the decision to reduce the number of funding areas, all contributions were spent in the primary scopes by 2016.

IV. FINANCIALS 2016

ASSET VALUE

Total assets: CHF 211,661,200

Net performance of the asset management (excluding illiquid investments): +4.64%. The distribution of assets is shown below.

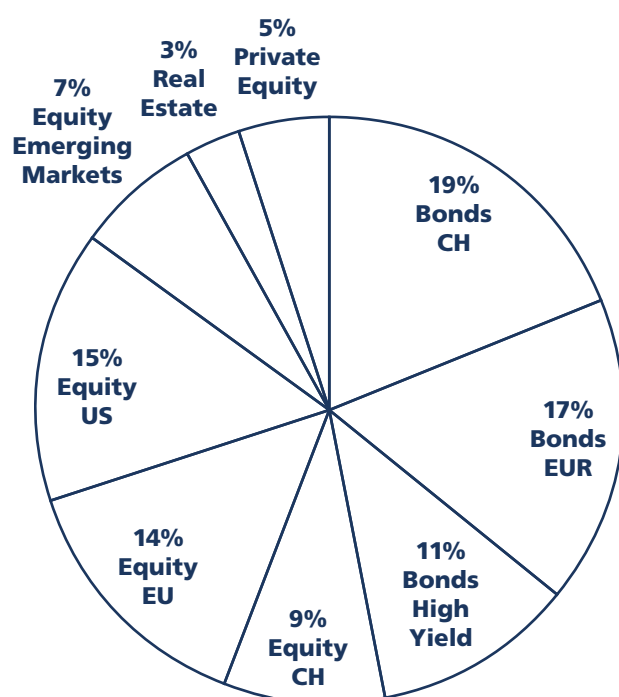
ESG COMPLIANCE

In 2014, the board decided that the portfolio of the foundation must be compliant with the UN Global Compact and undergo an annual screening. The screening in 2016 showed only in one mandate an issue which is under observation now. Another fund which also was not compliant with the new requirements has been sold.

INVESTMENT POLICY

The investment committee decided to make new commitments in illiquid investments. The foundation now invests more in private equity, global real estate and renewable energy production. Correspondingly the bond investments are reduced. The cooperation with the Danish sister foundations regarding a more consequent impact investing approach will continue and be intensified in 2017.

DISTRIBUTION OF ASSETS IN 2016



V. ENGAGEMENT FOR THE PHILANTHROPIC SECTOR

The Velux Stiftung continuously strives to improve itself and wants to take a role model for other grant-making foundations. The foundation wants to share how it pursues an impact oriented funding approach, a competitive application procedure and the initiatives to create leverage with own projects. We therefore engage in the philanthropic sector and disseminate our knowledge by reaching out through various activities.

Director Lukas von Orelli gave talks and participated in various panels. Among others:

- **Presentation about the foundation’s strategic approach at a meeting of Swiss corporate foundations organised by SwissFoundations**
- **Panel on sustainable investing at the “Zürcher Stiftungstag”**
- **Panel at the “Geneva Forum on Sustainable Investments”**
- **Lecture at the 9th Liechtensteiner Stiftungsrechtstag in Vaduz about «Governance in foundation finance»**

The Velux Stiftung is particularly engaged in the association of Swiss grant-making foundations, SwissFoundations as active participant in the working groups “education, research and innovation” and “finance”. The foundation’s director, Lukas von Orelli, has been elected as president of the association in autumn 2015 and officially started his presidency at the general assembly in June 2016. In his function as president of SwissFoundations, he gave several talks and participated at various events and meetings in the philanthropic sector and beyond.

SCOPE OF ACTIVITIES

VI. FUNDING STATISTICS

This year 62 project applications or outlines (“External projects”) were submitted to the foundation of which 15 applications were approved with a total amount of CHF 5,665,885. The foundation additionally approved CHF 1,520,000 for two own projects. The total amount of contributions in 2016 is CHF 7,185,885.

CONTRIBUTIONS TO EXTERNAL AND OWN PROJECTS

	2016	2015	2014	2013	2012
External projects					
Daylight	1,287,185	728,800	1,096,500	0	1,036,500
Healthy Ageing	3,511,000	2,212,800	794,000	808,000	718,450
Ophthalmology	867,700	1,048,000	0	1,530,550	643,000
Medicine/Biology	0	210,000	400,000	277,000	642,800
Subtotal “External projects”	5,665,885	4,199,600	2,290,500	2,615,550	3,040,750
thereof					
Switzerland	3,376,485	2,486,600	1,930,500	2,410,550	2,410,750
Foreign countries	2,289,400	1,713,000	360,000	205,000	630,000
Own projects					
Scientific workshops		80,000	100,000	30,000	
Healthy Ageing Initiative	320,000				
Daylight Award			360,000	353,750	
Daylight Academy	1,200,000	200,000			
Subtotal “Own projects”	1,520,000	280,000	460,000	383,750	0
TOTAL	7,185,885	4,479,600	2,750,500	2,999,300	3,040,750

VII. OWN PROJECTS

INTERNATIONAL DAYLIGHT ACADEMY

The inauguration of the international Daylight Academy was a first major step to join the different disciplines involved in daylight research and offer an interdisciplinary platform and a network for exchange in order to catalyze and foster innovation.

Daylight affects human life and nature in many ways. It is essential for health and wellbeing, makes plants grow and is an inexhaustible source of energy. And – it is for free. Due to the variety of its effects, it taps into many different areas of research. Scientists all over the world are engaged to explore and discover new aspects of daylight in their various disciplines and many applications have followed from this.

Nowadays society is facing complex challenges that can only be addressed involving all necessary disciplines. Yet scientific disciplines are getting ever more specialized. Daylight is the bridge bringing them together and talking about issues like health and climate.

To provide a novel and stimulating setting to the quest for scientific discoveries, the Velux Stiftung has founded the International Daylight Academy. The purpose of the Daylight Academy is to be a catalyst for innovative ideas and connect researchers and other professionals working in daylight research, regardless if they are approaching the topic with the eye of a chemist, architect or psychologist.



<https://daylight.academy>



The founding members of the Daylight Academy at the inauguration event on 24 November 2016.



The steering committee of the Daylight Academy from left to right: Burkhard König, Arthur Gessler, Jean-Louis Scartezzini, Anna Wirz-Justice, Bernhard Wehrli, Brian Norton. Not on the picture: Albert Gjedde.

After intensive preparation for the last two years the inauguration of the Daylight Academy in November marked the beginning of this novel platform for exchange that promotes international and interdisciplinary cooperation. The members have already worked hard on the first publication of the Daylight Academy. It will give an overview of the still unanswered questions in the different fields working with daylight and will be published in 2017.

The board appointed 65 leading personalities from science, architecture and art as founding members and elected seven well-reputed scientists into the steering committee to lead the future academy:

- **Prof. Dr. Arthur Gessler**, Swiss Federal Research Institute WSL, Switzerland
- **Prof. Dr. Albert Gjedde**, University of Copenhagen, Denmark
- **Prof. Dr. Burkhard König**, University of Regensburg, Germany
- **Prof. Dr. Brian Norton**, Dublin Institute of Technology, Ireland
- **Prof. Dr. Jean-Louis Scartezzini**, École Polytechnique Fédérale de Lausanne EPFL, Switzerland
- **Prof. Dr. Bernhard Wehrli**, ETH Zurich and Eawag, Switzerland
- **Prof. Dr. Anna Wirz-Justice**, Professor emerita and Research Fellow at the Centre for Chronobiology, Psychiatric Hospital of the University of Basel, Switzerland

Additionally, the board approved the statutes, the organisation of the Daylight Academy and its budget of CHF 1,200,000 for the coming four years.

INTERNATIONAL DAYLIGHT AWARD

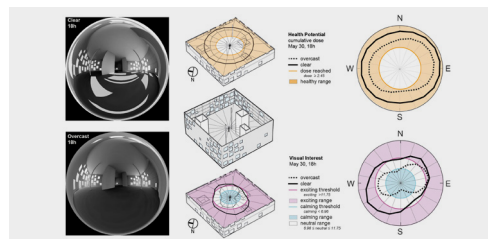
The Daylight Award has grown: as an international prize, it is awarded every other year for outstanding work in the fields of research and architecture focusing on daylight.

For the first time the Velux Stiftung presented the International Daylight Award together with its sister foundations Villum Fonden and Velux Fonden from Denmark.

The award ceremony took place in Copenhagen on the 2nd November with 121 international guests from science and architecture. The Swiss delegation counted 16 participants who enjoyed the award night and the excellent networking opportunities. Together with a reception at the Swiss Embassy the evening before, it was a very successful event.

The laureates were:

- **Marilyne Andersen**, Professor of Sustainable Construction Technologies and Dean of the School of Architecture, Civil and Environmental Engineering (ENAC) at École Polytechnique Fédérale de Lausanne EPFL
- **Steven Holl**, Principal of Steven Holl Architects, New York City and Beijing



Left: Professor Marylene Andersen giving her speech at the award ceremony in Copenhagen. Right: An example of the holistic approach to daylighting performance: integrating visual, health and perceptual aspects.



Left: Steven Holl receiving the first International Daylight Award from the president of the Velux Stiftung, Kurt Stutz. Right: The Reid Building, Glasgow School of Art (photo by Iwan Baan).

HEALTHY AGEING INITIATIVE

With the World Health Organization (WHO) the Velux Stiftung has found an outstanding partner to push the foundation's agenda to establish research standards and research priorities to advance the field of healthy ageing.

For years the Velux Stiftung has been looking for areas and topics in Healthy Ageing research where private money is needed since no other source is available. Among several important topics, the need for research standards (as in metrics, measures and analysis) and research priorities for healthy ageing was becoming more and more urgent regarding the demographic challenges in society. At the same time while the Velux Stiftung together with scientists developed a concept to address this need, the World Health Organization (WHO) presented its World Report on Ageing and Health.

One of the declared objectives in the global strategy and action plan is to improve metrics, measures and analytical approaches as well as to identify the research priorities for a better understanding of healthy ageing. The foundation recognized an exceptional opportunity for a valuable collaboration. Already in March the board approved the support of a project to develop these standards and priorities with CHF 320,000 under the lead of the WHO. The foundation contributed its concept and network and will participate in the workshops and meetings of the project. The tremendous leverage of this collaboration is unique for the foundation.



The Global strategy and action plan on ageing and health was adopted by the World Health Assembly in May 2016.

Global strategy and action plan on ageing and health (2016-2020)

VIII. EXTERNAL PROJECTS IN DETAIL

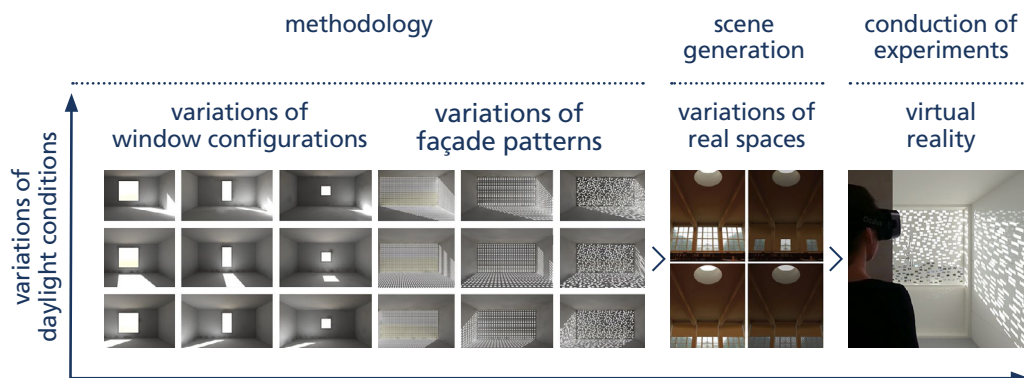
The board approved the following projects in 2016:

A. DAYLIGHT RESEARCH

1. IDENTIFYING THE IMPACT OF REGIONAL DIFFERENCES ON THE PERCEIVED QUALITY OF DAYLIT ARCHITECTURAL SPACES: A COMPARISON STUDY ACROSS DIFFERENT LATITUDES

Prof. Dr. Barbara Szybinska Matusiak, Department of Architectural Design, Form and Colour Studies, NTNU Norwegian University of Science and Technology, Trondheim, Norway
CHF 340,000

When we enter a space, daylight shapes how we feel about it. But how does our impression of space change with different daylight, window and façade configurations? Does this impression change if we ask the opinion of people in different latitudes across Europe? This project aims to answer these questions, investigating the impact of regional differences on the perceived quality of daylit architectural spaces. Using a novel experimental method with a Virtual Reality headset, the researchers will conduct identical experiments in countries with different latitudes in Europe (Norway/Switzerland/Greece). Through these experiments, this project aims to provide insights both on the way daylight and façade properties affect how people perceive a space, and on how regional differences might influence this perception.



By using a Virtual Reality headset the study will investigate the perception of different variations of daylight conditions of people from different latitudes.

2. USING SUNLIGHT TO TREAT KERATOCONUS

Prof. Dr. Farhad Hafezi, Center for Applied Biotechnology and Molecular Medicine (CABMM),
University of Zurich, Switzerland
CHF 376,800

The corneal disease keratoconus is the most common reason for vision loss in young people. Corneal cross-linking (CXL) with UV-A light and riboflavin (Vitamin B2) is the current standard of treatment to stop keratoconus progression. CXL involves soaking the cornea with the chromophore riboflavin and irradiating it with UV-A light administered by a medical device. Since the absorption peaks of riboflavin are within the spectrum of natural sunlight, this project aims to provide a CXL treatment by replacing the monochromatic UV irradiation from the light source with the broad-spectrum irradiation from sunlight.

3. TOWARDS SUNLIGHT-POWERED ACTIVE MEDICAL IMPLANTS

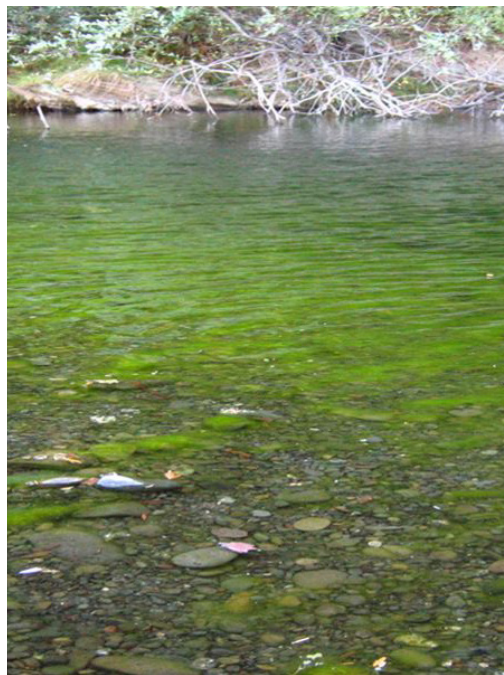
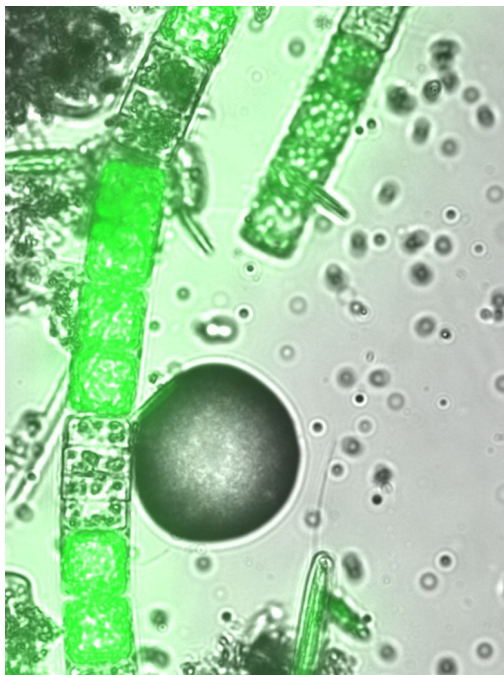
Prof. Dr. Hildegard Tanner, Department of Cardiology,
University Hospital Bern, Switzerland
CHF 197,600

Electronic medical implants are powered by batteries with a limited energy storing capacity. Due to battery depletion, these devices need to be replaced regularly, causing costs and exposing patients to a risk of complications. This aim of this project is to validate a novel method to overcome the need for batteries in medical implants (e. g. cardiac pacemakers). Subcutaneous solar cells may provide enough energy to power such implants. The goal is to build and validate a working prototype of a battery less solar pacemaker.

4. IMPACT OF MICROPLASTIC-LIGHT INTERACTIONS ON A BIOFILM-GRAZER SYSTEM (AMPLEBIG)

Dr. Renata Behra, Environmental Toxicology, Eawag,
Dübendorf, Switzerland
CHF 200,000

The project Amplebig deals with microplastic (MP) in fresh waters where they can bind chemical contaminants and sunlight exposure alters their surface characteristics. In streams, MP settle and can be incorporated in benthic microbial biofilms. Amplebig aims to test (i) the effects of pristine and sunlight-altered MP on the structure and functions of stream biofilms, (ii) the interactive effects of MP with chemical contaminants on biofilms, and (iii) the trophic transfer of MP from biofilms to aquatic snails that graze on the biofilms.



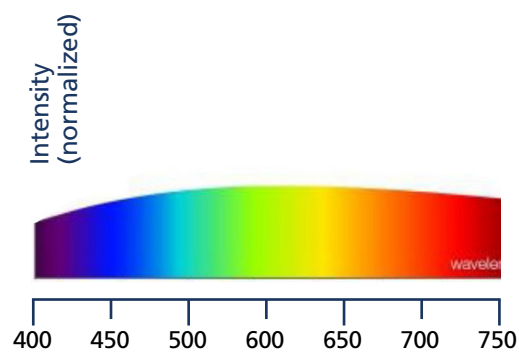
Left picture: Microplastic particle of ca. 50 μm diameter (the round blob) and freshwater algae. Right picture: Benthic biofilm in a stream consisting of microbial and algal components, primary food source for grazers like aquatic snails.

5. DAYLIGHT SIMULATION FOR BETTER WELL-BEING, SLEEP AND PERFORMANCE IN WINDOWLESS WORKING ENVIRONMENTS (DAYWELL)

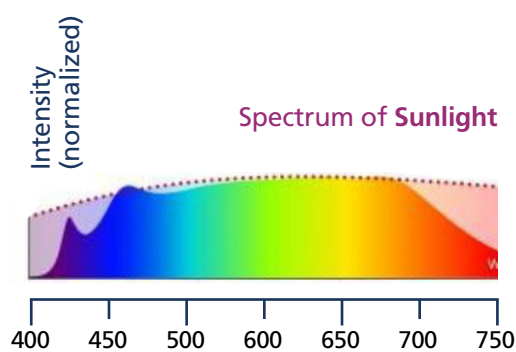
Prof. Dr. Christian Cajochen, Centre for Chronobiology,
Psychiatric University Hospital, Basel, Switzerland
CHF 150,000

The project (DayWell) will compare a dynamic daylight simulation solution with a fixed usual lighting solution on its impact on sleep, well-being, cognitive performance and circadian rhythms in healthy volunteers. The goal is to simulate a light situation at the work place, which comes as close as possible to natural daylight with a new dynamic LED device in order to exploit the beneficial effects of light on human health and quality of life. DayWell is of relevance since many people are frequently working in windowless rooms such as in in subterranean department stores.

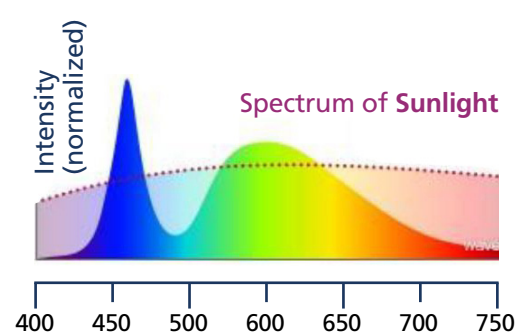
Sunlight



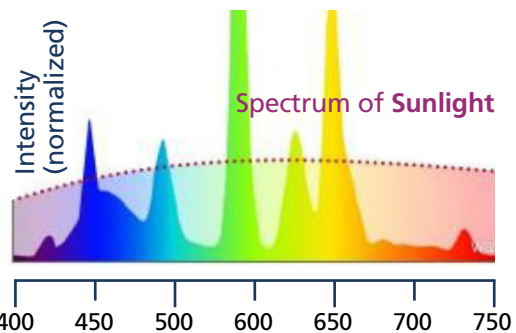
TRI-R



Commercial LED



Fluorescent lamp

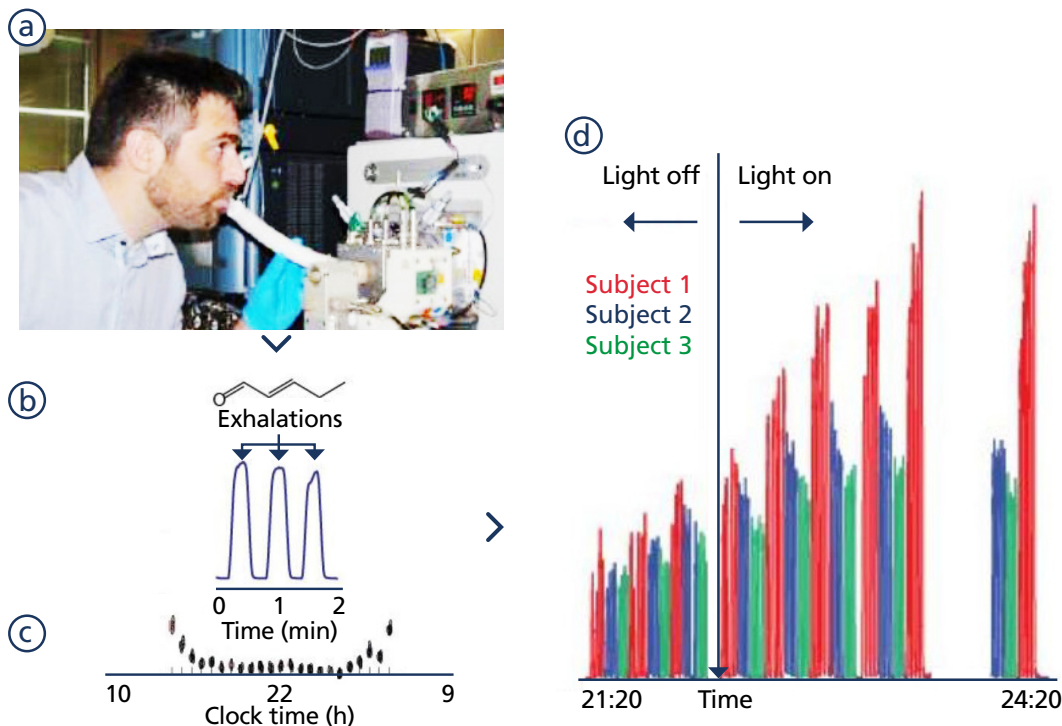


Different light sources contribute various fractions of the light spectrum. From top left to bottom right: natural daylight spectrum, a simulated daylight spectrum by TRI-R technology (<http://trir-pj.com/technology/>), which will be used in the daylight simulation device for DayWell, classical LED spectrum and a classical fluorescent light spectrum. X-axis: wavelength in nm, Y-axis: relative contribution from 0 to 1.

6. DECIPHERING LIGHT-INDUCED METABOLISM BY REAL-TIME BREATH ANALYSIS

Dr. Pablo Martinez-Lozano Sinues, Department of Chemistry and Applied Biosciences, ETH Zurich, Switzerland
CHF 165,000

Light is known to unlock a cascade of physiological changes in living organisms, including humans. These processes mediate fundamental aspects of our lives as for example awake-sleep patterns. However, how exactly light induces these changes is poorly understood. One of the reasons is the difficulty to analyze such rapid changes of metabolites in body fluids. During this project light-induced changes in metabolism will be investigated. To do so, fluctuations of metabolites concentrations will be captured via a novel breath analysis technique. This method is non-invasive and allows for real-time analysis. The goal is to understand the mechanisms of light-induced metabolism to ultimately determine optimal conditions of light exposure to improve its therapeutic effects. This therapeutic strategy is especially well-suited to treat circadian disorders in shift workers.



Preliminary data reinforcing the feasibility of this project: a) Modified mass spectrometer for real-time breath analysis; b) typical response of the detection of pentanal in breath. In just two minutes three replicate exhalations are measured with excellent repeatability; c) Example of circadian variation of indole in breath over a 24 h cycle; d) Response to light on three different subjects. Increase of a breath profile upon light exposure.

B. HEALTHY AGEING

7. DUAL ROLE OF NUCLEAR FACTOR KAPPA B IN THE AGEING MOUSE VISUAL SYSTEM: PREMATURE AGEING VERSUS REJUVENATION

Dr. Ronny Haenold, Department Immunology,
Leibniz-Institute on Ageing, Jena, Germany
CHF 79,400 (EUR 73,000)

Ageing is associated with alterations in gene expression patterns that are orchestrated by transcription factors. Among them, NF- κ B has been identified as master regulator of age associated gene expression in mitotic tissues such as skin, but its role for normal function and ageing of the post mitotic nervous system is largely unresolved. This study aims to address this important question by focusing on the mouse visual system. It is demonstrated that modulation of NF- κ B activity either stabilizes or accelerates impairments of visual functions with ageing, and this is determined by the presence of transcriptional activator or repressor subunits of NF- κ B. It is now being searched for the differentially regulated target genes of NF- κ B and for their contribution to visual plasticity to establish a molecular connection between ageing and plasticity.

8. STRESSING MITOCHONDRIA FOR HEALTHY AGEING

Prof. Dr. Johan Auwerx, Institute of Bioengineering,
École Polytechnique Fédérale de Lausanne (EPFL), Switzerland
CHF 225,000

Malfunction of mitochondria, the energy-producing organelles of the cell, is linked to metabolic and neurological diseases. Recently, mitochondria have also been shown to play an important role in ageing. The overall goal of this project is to identify genes regulating the mitochondrial stress response and its involvement in the ageing processes. To achieve this goal, genetic approaches will be used in a short-lived worm model and the BXD genetic reference population of mice, which better reflects the human genetic diversity than traditional knockout mice.

9. IMPACT OF THYROID HORMONE REPLACEMENT ON CARDIAC FUNCTION AND PROGRESSION OF ARTEROSCLEROSIS IN OLDER ADULTS WITH SUBCLINICAL HYPOTHYROIDISM

Prof. Dr. Nicolas Rodondi, Department of General Internal Medicine, Inselspital, University of Bern, Switzerland
CHF 298,000

The proposed study aims to understand the effect of thyroid hormone medication on heart function and thickening of the precerebral arteries (atherosclerosis) in older adults with a mildly underactive thyroid gland (subclinical hypothyroidism), a common finding among older adults. 215 patients over 65 years with subclinical hypothyroidism were randomized in a treatment or control group. Assessment of atherosclerosis and heart function with an ultrasound of the precerebral arteries and the heart will be carried out. Together with analysis of blood markers, the results may change prevention, diagnostics and treatment procedures of both subclinical hypothyroidism and cardiovascular diseases in old people.

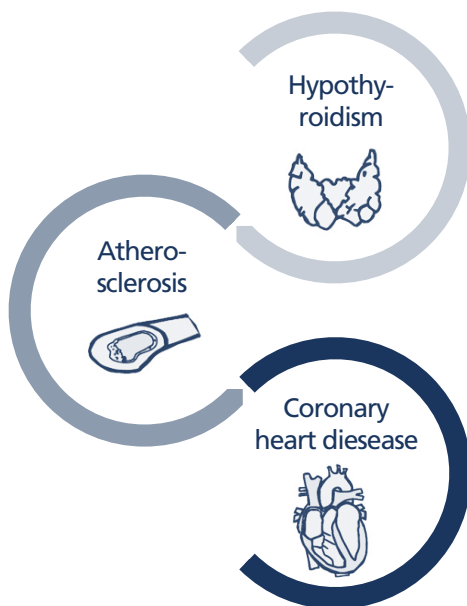


Illustration: Carmen Floriani
Technical support: Ermes Floriani

Coronary heart disease is among the major causes of death, particularly in the elderly. Similarly, subclinical hypothyroidism, a mild form of thyroid hormone deficiency, is common and affects up to 10% of the elderly. Thyroid hormone replacement therapy could potentially reduce these increased risks. We aim to fill in this gap of knowledge by examining the effect of thyroid replacement therapy on the atherosclerosis in the carotid arteries and on the heart function assessed via echocardiogram.

10. THE ROLE OF EMOTIONAL AND MOTIVATIONAL
ATTENTION IN HEALTHY AGEING: FROM THE LAB
TO THE HOME

Prof. Dr. Derek M. Isaacowitz, Department of Psychology,
Northeastern University, Boston, USA
CHF 1,000,000

Why do some people age in good physical and psychological health while others feel exhausted and listless? This project aims to better understand emotional and motivational factors associated with healthy ageing in everyday life. The central research question is: How do age-related changes in emotional experiences and motivation affect health-related behaviours and psychological well-being?

11. THE INTERVENTION FACTORY: ADVANCING
COMMUNITY-BASED ACTIVITIES AS INTERVENTIONS
FOR COGNITIVE AGEING

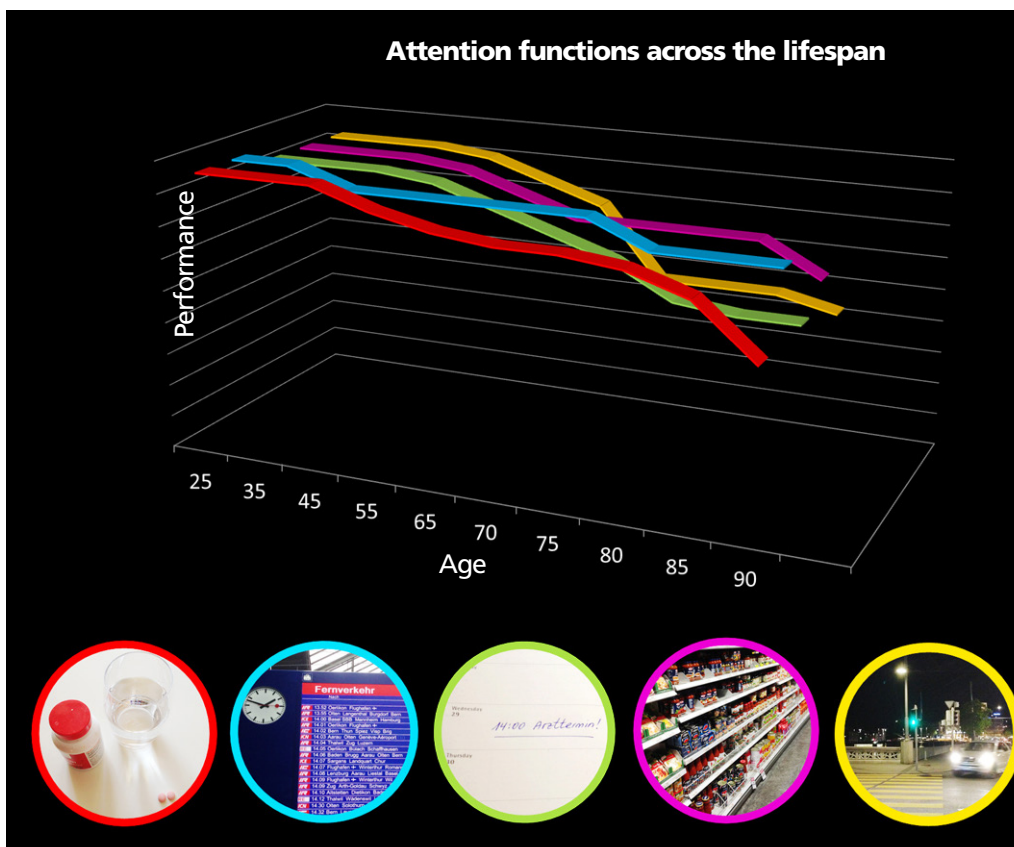
Prof. Dr. Alan Gow, School of Life Sciences, Heriot-Watt
University, Edinburgh, United Kingdom
CHF 500,000 (GBP 344,000)

As we age, we may experience general declines in our thinking, memory and reasoning skills (cognitive ageing). There is large variation in the degree of decline experienced. Keeping intellectually, socially or physically engaged have all been proposed as potentially protective. These factors have been incorporated in interventions for cognitive ageing, though are often developed and tested in lab-based settings that may not translate to realistic environments. This project will test a range of activities within existing community-based programmes as potential interventions to reduce cognitive ageing in old age.

12. WHEN THE MIND'S EYE GROWS OLD: ASSESSING PERCEPTUAL AND INTERNAL ATTENTION IN THE AGEING MIND

Dr. Alessandra S. Souza, Institute Psychology,
University of Zurich, Switzerland
CHF 300,000

To efficiently navigate our crowded visual environment, it is needed to enhance relevant and inhibit irrelevant inputs. To select among thoughts, memories and action alternatives are also needed. Attention serves these functions. The main goal of this project is to uncover how different attentional abilities change in the course of healthy ageing. The planned project measures individual and age differences in a broad range of attentional abilities. It will be investigated whether different forms of attention change differently in healthy ageing, and how they relate to general cognitive fitness and to the prevalence of everyday cognitive failures in old age.



What is the attention function across lifespan? Several facets of attention will be tested, such as attention to locations in space, to specific features, or objects. The trajectories in the picture are examples.

13. IMPROVING METABOLISM TO PROMOTE HEALTHY AGEING

Prof. Dr. Riekelt Houtkooper, Laboratory Genetic
Metabolic Diseases, Academic Medical Centre, Amsterdam,
The Netherlands
CHF 370,000 (EUR 333,702)

The overall goal of the project is to understand how metabolism goes awry during ageing, leading to age-related metabolic disease. Research over the last years has highlighted that nutrition can accelerate ageing, and we want to understand which genes are responsible for these effects. To achieve these goals, we need better tools to measure metabolism, and the requested funding in the current proposal addresses this need by developing novel metabolomics tools.

14. INDIVIDUALIZED REAL-LIFE TECHNOLOGIES LABORATORY FOR HEALTHY AGEING RESEARCH

Prof. Dr. Mike Martin, Gerontology Center,
University of Zurich, Switzerland
CHF 1,198,000

The project uses an interdisciplinary laboratory to (a) provide access to real life health outcome measurement tools, (b) conduct feasibility studies to demonstrate usefulness of an individualized real life health outcome measurement in old adults, (c) collect individualized real life health data in old adults, (d) develop software to extract health-related information from real-life measurements of behaviours and (e) develop computational models to measure, improve, and analyse health behaviours and health outcomes in the everyday life of ageing individuals. This allows to systematically monitor the effects of individualized health interventions on real-life outcomes that are functionally important for individual persons.

C. OPHTHALMOLOGY

15. THE ROLE OF FAT10 IN THE DEVELOPMENT OF LEBER CONGENITAL AMAUROSIS (LCA) CAUSING EARLY CHILDHOOD BLINDNESS: CHARACTERIZING THE REGULATION AND FUNCTIONAL CONSEQUENCES OF FAT10YLATING PHOSPHODIESTERASE 6 (PDE6) IN THE RETINA

Prof. Dr. Marcus Groettrup, Immunology Institute,
Biotechnology Institute Thurgau at the University
of Konstanz (BITg), Kreuzlingen, Switzerland
CHF 371,300

Recently a relationship was identified between AIPL1, a protein which has been associated with Leber congenital amaurosis (LCA) and the ubiquitin-like modifier FAT10 in a way that AIPL1 inhibited the degradation of FAT10ylated proteins by the proteasome during early eye development while certain pathogenic mutants of AIPL1 failed to do this. Now the first substrate of FAT10, the retina-specific PDE6, necessary for the transmission of light, has been identified. Goal of this project is to identify the outcome of the modification of PDE6 by FAT10 and to elucidate its impact on the pathogenesis of LCA.

IMPRINT

Publisher:

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