Cancer Research in Switzerland

A publication of the Swiss Cancer Research foundation,
the Swiss Cancer League and the cantonal cancer leagues
on their funded research projects
Edition 2015

Imprint

Publisher and information:
Swiss Cancer League
Effingerstrasse 40
P.O. Box 8219
CH-3001 Bern
Tel. +41 (0)31 389 91 16
scientific-office@swisscancer.ch
www.swisscancer.ch/research

Article number: 4034
Publication date: November 2015

English edition: 400 Ex.
German edition: 4400 Ex.
French edition: 1300 Ex.

Responsible:
Dr Rolf Marti
Head of Research, Innovation & Development department, Swiss Cancer League

Project management and editing:
Dr Ori Schipper
Communication officer for Research, Innovation & Development department, Swiss Cancer League

English translation: Ellen Russon, East Sandwich, Massachusetts, USA, www.ellenrusson.com
Images: simonehaug.com
Design: atelierrichner.ch
Print: Ast & Fischer AG, Wabern

This edition of the report as well as all previous editions can be downloaded as PDF files at www.swisscancer.ch/researchreport

Simone Haug (*1981 in Bern) lives in Biel and works as a freelance photographer in Switzerland and abroad. She studied sociology in Bern and arts at the academy for visual arts in Hamburg.

In her recent works Haug examines the processes and images used in the production of carpets. She uses varying techniques and different perspectives. Her pictures were created in the context of contract work or artistic projects.

Although her work is highly original, her inquiring look at details and the radiographies are related to science. The carpets could as well be an allegory for the networked approach in cancer research.

www.simonehaug.com

Cancer Research in Switzerland

Edition 2015

Table of contents

Editorial

In 2014 the Swiss Cancer Research foundation (SCR), the Swiss Cancer League (SCL), and the cantonal and regional cancer leagues invested another new record sum in cancer research. This was only possible thanks to generous donations. But successful research funding activity also depends on ensuring that funds flow into the best projects. This is why before receiving funding, research projects must pass a strict evaluation by the Scientific Committee of the SCL and SCR, whose 18 members are recognized experts (and serve according to the militia system). Each research grant application submitted is reviewed by Scientific Committee members and also by external international experts: How innovative is a project, and what are the chances that the project can be conducted successfully? The Scientific Committee also evaluates the grant applicants' past accomplishments and whether they have chosen the most appropriate methods for project realization.

Based on these clear criteria, the Scientific Committee then creates a ranking list that separates the research wheat from the chaff. A recent independent external evaluation of SCL and SCR research funding activities found that the Scientific Committee's research grant application review process is helpful, fair, and competent – and that it makes good selections. But beyond that, the fact that more and more organizations are making use of the Scientific Committee's knowledge and competence is a further independent confirmation of its high-quality work. For some time now, several cantonal cancer leagues and the Swiss Bridge Foundation have relied on the review services of the Scientific Committee or other individually configured specialized committees. In 2014 for the first time also the Movember Foundation used the research funding competence of our experts, and as a result over a million Swiss francs went into supporting a clinical study in Switzerland and France that is investigating better treatment options for prostate cancer.

Thomas Cerny

Jakob R. Passweg

This steady rise in confidence in our work makes us very proud – and at the same time means that we have an increasing obligation: We will continue to do our best to select good, original, and relevant research projects for funding. It is not only that our partner organizations expect this of us; we owe it to all of the donors. Only with their generous support is it possible for us to fund research projects that are not striving to make profit but instead aim exclusively at improving survival rates and quality of life for patients with cancer.

Prof. Thomas Cerny, MD
President of the Swiss Cancer Research foundation

Prof. Jakob R. Passweg, MD
President of the Swiss Cancer League

Research funding on the road to success

In 2014 the Swiss Cancer Research foundation (SCR), the Swiss Cancer League (SCL), and eight cantonal cancer leagues (CCL) together gave 22.9 million francs in funding to industry-independent cancer research in Switzerland. In a peer review process, once again the best one-third of research projects submitted could be approved for funding, and it is hoped that they will soon bring direct benefit to patients. We thank all of the charitable donors for their trust and support.

Cancer affects everyone, directly or indirectly. One out of three persons in Switzerland will have cancer in their lifetime, and approximately one in four deaths is due to cancer. A cancer diagnosis is a life-altering and distressing event for patients and their families. But thanks to advances in research, early detection, and treatment, for more than half of patients today a cancer diagnosis is no longer a death sentence: Even if there can be no "cure" in the proper sense of the word (because unfortunately it cannot be excluded that cancer may recur many years later), many patients live for five, ten, or even twenty years after cancer diagnosis. For this reason, the number of cancer survivors is increasing rapidly. Whereas in 1990 fewer than 100 000 persons survived longer than five years after cancer diagnosis in Switzerland, today, twenty years later, that number has more than doubled. This development poses new challenges to society but also to cancer research.

Cancer: A difficult opponent

Because cancer incidence increases with increasing age and because the population of Switzerland is aging, not only the number of persons with cancer but also the importance of cancer in the future will probably increase steeply – in this country and worldwide. A difficulty in fighting cancer is also the fact that cancer is a general term used to describe more than 200 different diseases that are now known. Some types of cancer are being divided into more and more specific subgroups that differ in cause, development, course, and treatment. The more that is known about cancer, the more complex the picture becomes. For this reason it is not surprising that cancers – despite the numerous advances that medicine has made in the fight against tumours – cause more than 16 000 deaths in Switzerland each year, making cancer the second most common cause of death.

Research and innovation are therefore as important as ever and are the basis of the hope that survival rates and the quality of life of persons with cancer will be improved. The advances achieved in the context of individual independent research projects or studies are mostly only small. But a look at this path

Rolf Marti, PhD
Head of Research, Innovation & Development department, Swiss Cancer League

of the many small steps over a longer time period makes the successes clearly visible. The Swiss Cancer Research foundation (SCR), the Swiss Cancer League (SCL), and several cantonal cancer leagues (CCL) use a significant part of the contributions from charitable donors to support patient-centred research: research projects that bring as much direct benefit to patients as possible.

Diverse research areas

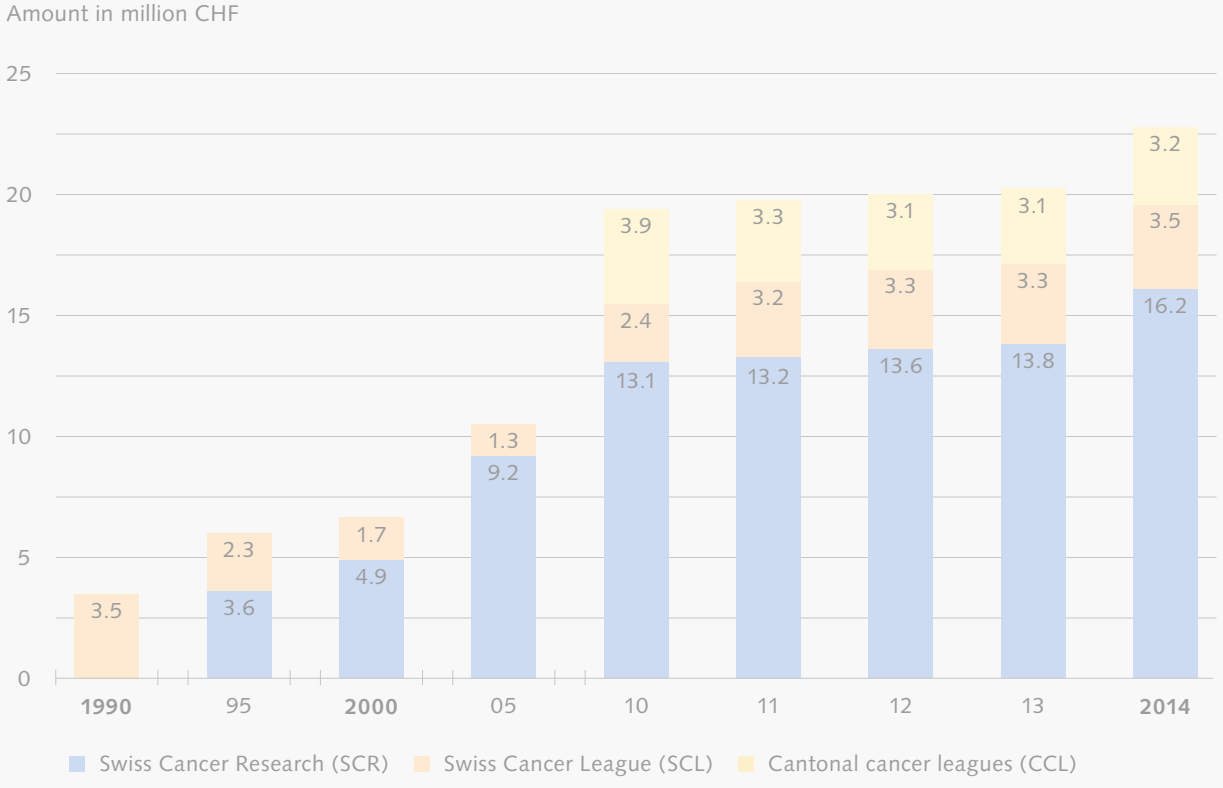
The SCR, SCL, and CCL support research projects across the entire broad range of cancer research, grouped in four central research areas: basic, clinical, psychosocial, and epidemiologic cancer research. Basic research studies how cancer cells develop, proliferate, and spread in the body. Clinical research works with cancer cells and tumour tissue, to identify new biomarkers or targets, for instance, so that better diagnostic methods or more effective drugs can be developed. Clinical research also conducts clinical trials with patients to establish new, improved treatments or to optimize existing treatments. Psychosocial research studies the mental and social effects of cancer. It aims to improve the quality of life of persons with cancer and their families. Epidemiologic research examines, for example, the rates of cancers in the population and the factors that have an effect on cancer risk, such as age, smoking, lack of exercise, one-sided diets, or unfavourable environmental factors. The SCR, SCL, and CCL also fund research projects in nursing sciences, prevention, public health, and health services research.

A new record sum of 22.9 million francs for cancer research

In 2014 the SCR, SCL, and CCL provided a total of 22.9 million francs for diverse cancer-related research projects (Figure 1). This is the highest sum they have ever given to cancer research, and it exceeds the previous year's record by more than 2 million francs.

Figure 1
Cancer research funding by SCR, SCL, and CCL since the founding of SCR in 1990

Research funding by the CCL has been recorded centrally and published only since 2009.



The three organizations funded 169 cancer research projects (Table 1). A good 70 % of the funding came from the SCR and the rest from the SCL and the CCL more or less equally.

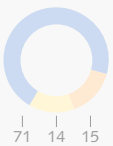
In line with the organizations' funding strategy, the lion's share of the funding – 19.4 million francs, or 84 % of the total funding – once again went to independent research projects. A much smaller amount of funding went to persons receiving bursaries. A total of 2.2 million francs went to six research organizations that provide elementary and indispensable basic services for clinical and epidemiologic cancer research in Switzerland. The SCR and the SCL also supported international and national organizations and programmes, such as the Union for International Cancer Control, European Organisation for Research and Treatment of Cancer, and the National Cancer Programme 2011–2015 with substantial amounts. Funding was also given to projects for the fight against cancer in Cuba, Nicaragua, Cameroon, and Belarus. Finally, numerous conferences and workshops were funded with contributions ranging from 1000 to 15 000 francs.

The distribution of the funds (for independent research, bursaries, and research organizations) to academic institutions shows that the University of Zurich and University Hospital Zurich were the most successful in submitting research grant applications in 2014 (Table 2).

Table 1
Research funding by SCR, SCL, and CCL in overview

Number of grants approved and amount granted in 2014 (all funding areas)

Total SCR, SCL and CCL	Independent research projects	Bursaries	Research organizations	Programmes, organizations and conferences	Total
Number of grants approved	113	8	7	41	**169**
Amount granted in kCHF	19 241	724	2 175	808	**22 948**
Proportion of total funding in %	83.8	3.2	9.5	3.5	**100**
SCR					
Number of grants approved	48	5	6	20	**79**
Amount granted in kCHF	13 084	566	1 975	608	**16 233**
Proportion of total funding in %	80.6	3.5	12.2	3.7	**100**
SCL					
Number of grants approved	12	3	1	21	**37**
Amount granted in kCHF	2 973	158	200	200	**3 531**
Proportion of total funding in %	84.2	4.5	5.7	5.7	**100**
CCL					
Number of grants approved	53	–	–	–	**53**
Amount granted in kCHF	3 184	–	–	–	**3 184**



71 14 15

(percentage of funds)

The other four university hospitals in Bern, Basel, Lausanne, and Geneva, as well as the ETH Zurich and ETH Lausanne also received research funding amounts ranging from 787 000 to more than 3 million francs.

Table 2
Distribution of cancer research funding by CRS and SCL to the research institutions in 2014

Research institutions	Number of projects	Amount in kCHF	Proportion in %
Gastroenterologie Oberaargau	1	365	1.9
PSI Villigen*		36	0.2
SAKK/IBCSG/SPOG/SCCR	5	1725	9.1
University/Inselspital Bern	13	3099	16.3
FMI Basel	1	227	1.2
University/University Hospital Basel	10	2409	12.7
IELSG	1	200	1.1
Hospital San Giovanni Bellinzona	2	570	3.0
IOSI/IRB	1	59	0.3
Hôpital cantonal de Fribourg	1	31	0.2
University of Fribourg	1	329	1.7
University of Geneva/HUG	4	787	4.2
EPF Lausanne	3	1111	5.9
University/CHUV Lausanne	7	1748	9.2
Kantonsspital St.Gallen	1	67	0.4
Krebsregister St.Gallen	1	250	1.3
Kantonsspital Winterthur	1	292	1.5
NICER	1	250	1.3
ETH Zurich	4	983	5.2
University/University Hospital Zurich	17	4418	23.3
Total	**75**	**18956**	**100**

* Supplementary funding for a grant approved in previous years

Abbreviations

CHUV	Centre Hospitalier Universitaire Vaudois
EPF	Ecole Polytechnique Fédérale
ETH	Eidgenössische Technische Hochschule
FMI	Friedrich Miescher Institute
HUG	Hôpitaux Universitaires de Genève
IBCSG	International Breast Cancer Study Group
IELSG	International Extranodal Lymphoma Study Group
IOSI	Istituto Oncologico della Svizzera Italiana
IRB	Institute for Research in Biomedicine
NICER	National Institute for Cancer Epidemiology and Registration
PSI	Paul Scherrer Institute
SAKK	Swiss Group for Clinical Cancer Research
SCCR	Swiss Childhood Cancer Registry
SPOG	Swiss Paediatric Oncology Group

Table 3
Distribution of funds by SCR and SCL and success rates within the amount granted to independent research projects

	2013		2014	
	Grant applications	Amount in kCHF	Grant applications	Amount in kCHF
All projects				
Received/applied for	173	38 164	167	47 956
Recommended	91		78	
Approved	63	12 710	60	16 057
Success rate	36 %	33 %	36 %	33 %
Basic research				
Received/applied for	92	21 382	85	26 133
Recommended	48		47	
Approved	26	5 624	29	8 708
Success rate	28 %	26 %	34 %	33 %
Clinical research				
Received/applied for	61	13 141	61	16 595
Recommended	31		19	
Approved	25	5 096	19	4 960
Success rate	41 %	39 %	31 %	30 %
Psychosocial research				
Received/applied for	11	2 017	9	2 013
Recommended	6		6	
Approved	6	1 000	6	1 139
Success rate	55 %	50 %	67 %	57 %
Epidemiologic research				
Received/applied for	9	1 624	12	3 215
Recommended	6		6	
Approved	6	990	6	1 250
Success rate	67 %	61 %	50 %	39 %

A good third of all grant applications submitted were approved for funding

As in the previous year, in 2014 competition for the limited funding available for independent research projects was stiff: Of the 167 grant applications submitted, the Scientific Committee of the SCR and the SCL recommended 78 projects for funding. Only 60 of these could be funded, however. And of the funds requested, also only one-third of the total requested funds could be granted. The researchers requested nearly 48 million francs; 16 million francs could be granted to the approved projects.

The greatest competition for funding was in basic research and clinical research. As in the previous year, research projects in the epidemiologic and especially in the psychosocial research area profited from the fact that only few grant applications were submitted that met the strict quality criteria. Six projects each were approved in epidemiologic and psychosocial research; they represent one half and even two-thirds of the grant applications submitted.

In addition to the quality of the projects – which is the central criterion in funding – the funding strategy of the SCR and the SCL is to support research projects that it is hoped will produce results that benefit patients and their families. For this reason, 60 % of the funding is earmarked for what is called patient-centred research: 40 % for clinical research and 20 % for research studies in the psychosocial and epidemiologic areas. But again in 2014 the funding organizations had to deviate from this ideal distribution rate: The number of high-quality patient-centred research projects was too small. Even though all projects recommended for funding were funded, less than half of the total sum available was granted to projects in the clinical, epidemiologic, and psychosocial areas. Projects in basic research profited from this and received 54 % of the funding, although 18 high-quality projects in this area could not be funded.

Indispensable services compensated through performance agreements

But patient-centred research is supported not only by funding independent research projects. Financial support is also given for central and indispensable services that six research organizations perform for the benefit of clinical and epidemiologic research in Switzerland. In clinical research, these services include designing study protocols, coordinating national and international multicentre studies, and administrative tasks for the study approval process with the ethics committees and Swissmedic, the Swiss authorization authority. In the area of cancer epidemiology, the organizations supported by the SCR provide researchers with know-how and resources for collecting, managing, and analysing data in the cantonal and national cancer registries (see box).

The research organizations supported in 2014 in brief

Swiss Group for Clinical Cancer Research (SAKK)
SAKK is a decentralized academic research institute that has conducted clinical studies on cancer treatment in all larger hospitals in Switzerland since 1965. SAKK encompasses a wide network of about 20 Swiss research groups and a coordination centre in Bern. For rare cancers SAKK works together with selected collaborative groups in other countries. SAKK aims to improve existing cancer treatments, study the effectiveness and tolerability of new treatments (radiotherapy, chemotherapy, surgery), and establish new treatment standards. In 2014 710 adult patients participated in 45 clinical studies conducted by SAKK. As an independent and non-profit organization, SAKK pursues no commercial interests.

International Breast Cancer Study Group (IBCSG)
Since 1977 the IBCSG has conducted academic clinical trials with the aim to improve treatment of women with breast cancer. The IBCSG is a multicentre study group with a coordination centre located in Bern, a data management centre and a statistics centre in the United States, and a pathology reference laboratory in Italy that serves the entire organization. In Switzerland, all university clinics, numerous cantonal hospitals, and oncologists in private practices participate in IBCSG studies. In 2014 nearly 200 patients worldwide participated in seven clinical studies conducted by the IBCSG.

National Institute for Cancer Epidemiology and Registration (NICER)
As a national coordination centre, NICER harmonizes the work of the 20 cantonal and regional cancer registries. It compiles the cancer data collected in the cantons, assures the quality of the data, and analyses the data at the national level. These data collected in the network are utilized to determine national statistics on cancer incidence. For healthcare policy, the data enable evidence-based decision making that benefits the population as well as individual patients with cancer.

International Extranodal Lymphoma Study Group (IELSG)
The IELSG is a multicentre study group that was created in 1998 in Ascona, with a coordination and data management centre in Bellinzona. It aims to coordinate international research activities in the area of extranodal lymphomas. As these lymphomas develop in all organs in the body, different treatments are required. To test their effectiveness, more than 200 international institutes participate in this network.

Swiss Paediatric Oncology Group (SPOG)
SPOG has been conducting clinical cancer research in paediatric oncology/haematology since 1977, with the aim to improve treatment and quality of life of children and adolescents with cancer. SPOG is a national, independent association with its headquarters in Bern. Members are all paediatric oncology departments at Swiss hospitals and the Swiss Childhood Cancer Registry. As childhood cancers are relatively rare, research in childhood cancer is possible only in the framework of international collaborations. At present, SPOG is taking part in more than 20 clinical trials in which approximately 150 young patients in Switzerland are participating.

Swiss Childhood Cancer Registry (SCCR)
The SCCR is the national cancer registry for children and adolescents in Switzerland. Since 1976 it has captured all new cases of cancer in young persons up to the age of 20. It also documents treatments and conducts longitudinal studies on health and quality of life of childhood cancer survivors. In this way it contributes towards research on the causes of childhood cancer, improvement of cancer treatment, and prevention of late effects in cancer survivors. The SCCR, which is funded from several sources, is located at the Institute of Social and Preventive Medicine at the University of Bern and works closely with SPOG. Up to now, the SCCR has collected data on 9300 children and adolescents with cancer.

Table 4
Supported research organizations

Funding by SCR, according to performance agreements in the years 2009–2014

Amount in kCHF

	2009	2010	2011	2012	2013	2014
Swiss Group for Clinical Cancer Research (SAKK)	600	600	600	600	800 *100	850 *200
International Breast Cancer Study Group (IBCSG)	560	560	560	560	500	450
National Institute for Cancer Epidemiology and Registration (NICER)	–	–	200	200	250	250
International Extranodal Lymphoma Study Group (IELSG)	–	–	–	200	200	200
Swiss Paediatric Oncology Group (SPOG)	100	100	100	150	150	150
Swiss Childhood Cancer Registry (SCCR)	–	–	50	50	75	75
Total	**1 260**	**1 260**	**1 510**	**1 760**	**2 075**	**2 175**

*Funding by SCL

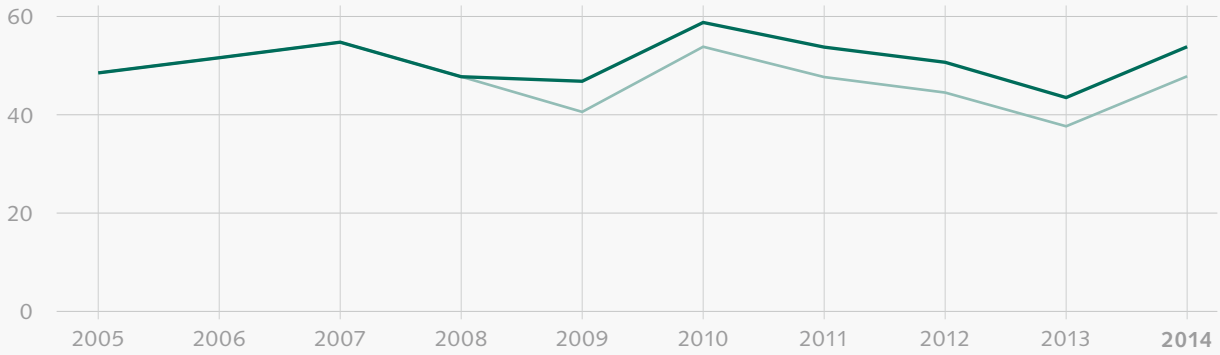
Table 5
Research funding by the cantonal cancer leagues in overview

Number of research projects and institutions supported and amount granted in 2013 and 2014

	Number of projects and institutions supported		Amount granted in kCHF	
Cancer league	2013	2014	2013	2014
Aargau	0	1	0	48
Basel	10	7	300	400
Bern	9	6	438	402
Central Switzerland	1	1	50	50
Eastern Switzerland	1	2	100	105
Geneva	14	16	1 235	1 305
Grisons	0	3	0	80
Neuchâtel	0	1	0	5
Schaffhausen	0	1	0	20
Thurgau	3	1	112	33
Ticino	5	4	268	250
Zurich	10	8	642	486
Total	**53**	**51**	**3 145**	**3 184**

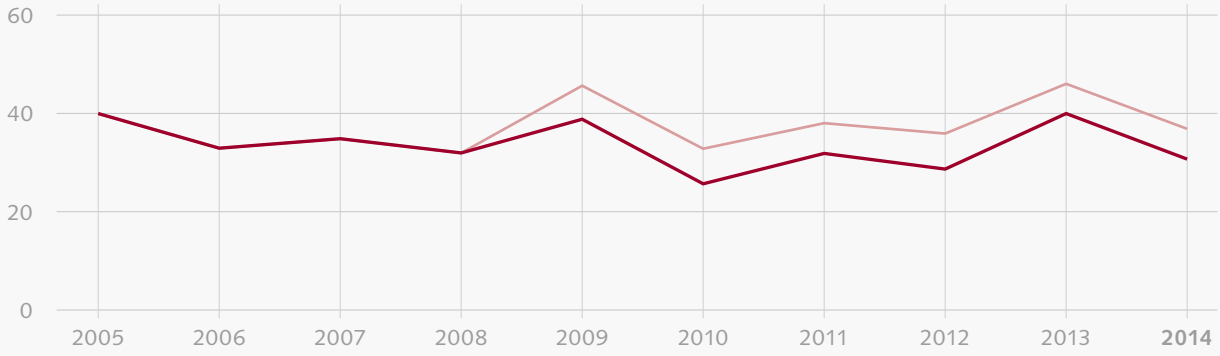
Figure 2
Proportion of total funding directed into the various research domains in the years 2005–2014

Basic research
in %



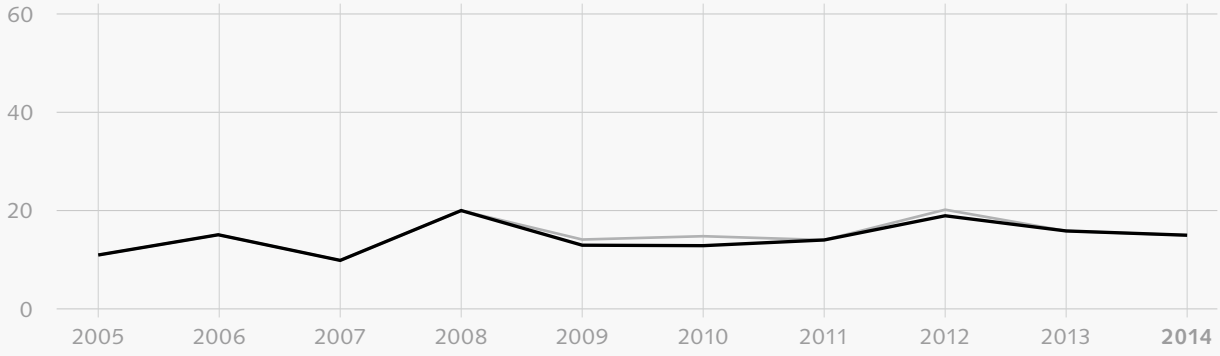
Proportion of total funding for independent research projects
Proportion of total funding for independent research projects and performance agreements

Clinical research
in %



Proportion of total funding for independent research projects
Proportion of total funding for independent research projects and performance agreements (with added amounts granted to SAKK, IBCSG, IELSG, and SPOG)

Psychosocial/epidemiologic research
in %



Proportion of total funding for independent research projects
Proportion of total funding for independent research projects and performance agreements (with added amounts granted to NICER and SCCR)

For their expenditure the research organizations receive compensation based on performance agreements that define in a clear and binding way the requirements with regard to reporting and evaluation and the objectives for research. In addition, there is the condition that the research organizations must secure independent and long-term financing that guarantees their continuing existence independently of contributions from the SCR. In 2014 the SCR supported six research organizations with a total of 2 million francs. Another 200 000 francs were provided by the SCL (Table 4).

If these performance agreements are included with regard to the ideal distribution of cancer spending, then the current distribution of funds comes close to the ideal of 60 % for patient-centred research (Figure 2).

Research funding by the cantonal cancer leagues

Compared to the previous year, in 2014 the CCL gave somewhat more money to a slightly lower number of research projects: 3.2 million francs to 51 research projects (Table 5). The largest sum was once again given by the Geneva Cancer League, followed by the Zurich, Bern, Basel, and Ticino Cancer Leagues. We are pleased to report that 12 of the total 19 cantonal and regional cancer leagues supported cancer research in 2014. The research projects and institutions supported by the CCL are listed on pages 35 to 39.

We are very grateful to all of the charitable donors, whose loyal and generous support is making advances possible in the fight against cancer. Their donations to cancer research lay the foundation for improving survival and quality of life in patients with cancer.

Rolf Marti, PhD

Rolf Marti has headed the Research, Innovation & Development department (formerly: Scientific Office) at the Swiss Cancer League since 2003.
He is a member of the managing board of the Swiss Cancer League and director of the Swiss Cancer Research foundation office.
As a member of the core group of the National Strategy Against Cancer 2014–2017, he currently focuses his work on the fields of action "Research promotion" and "Epidemiology and monitoring".

Tel. +41 (0)31 389 91 45
rolf.marti@krebsliga.ch
www.krebsliga.ch/forschung
www.krebsforschung.ch

Partner organizations and committees

Swiss Cancer Research foundation (SCR)

In existence since 1990, the Swiss Cancer Research foundation, with the help of donations, provides funding for all areas of cancer research: basic, clinical, epidemiologic, and psychosocial research. A special focus is the funding of patient-centred research projects that result as far as possible in direct patient benefit. The SCR foundation board is responsible for distributing the funds to researchers. The board's funding decisions are based on the recommendations made by the Scientific Committee, which reviews the grant applications according to clearly defined criteria. The SCR also supports the development and implementation of measures to fight cancer in Switzerland – namely, the National Strategy Against Cancer 2014–2017.

Contact
Swiss Cancer Research
Effingerstrasse 40
CH-3001 Bern
Tel. +41 (0)31 389 91 16
info@krebsforschung.ch
www.krebsforschung.ch

Swiss Cancer League (SCL)

The Swiss Cancer League (SCL) works towards a world where fewer persons get cancer, fewer persons suffer the consequences and die of cancer, more persons are cured of cancer, and persons with cancer and their families receive care and support in all phases of cancer and in dying. The Cancer League brings together the national umbrella organization headquartered in Bern and 19 cantonal and regional cancer leagues. The SCL supports the cantonal cancer leagues through knowledge transfer, provision of services, developments, and coordination at the national level. It provides information on risk factors and early detection measures and runs national cancer prevention programmes. It offers specific continuing education courses for a variety of occupational groups and funds cancer research.

Contact
Swiss Cancer League
Effingerstrasse 40
CH-3001 Bern
Tel. +41 (0)31 389 91 00
info@krebsliga.ch
www.krebsliga.ch

Cantonal cancer leagues (CCL)

The 19 cantonal and regional cancer leagues provide individual advice from experts to persons with cancer and their family members on treatment and on financial and organizational questions. The CCL staff often advise persons over a longer time period and support them in difficult situations. They provide information on legal and insurance issues and help with the reorganization of the clients' social and financial situations. The CCL also provide contacts to other support institutions, such as home care organizations. If their illness brings persons with cancer into financial difficulties, they can apply for support payments. The CCL organize group meetings and courses where persons with cancer can talk about their fears and experiences and can learn ways to deal with their illness. Some cancer leagues offer specialized psycho-oncology support for children of adults with cancer. And in some cantons there are outpatient oncology care services that support persons with cancer at home.

The CCL are at work in Switzerland and in Liechtenstein. The services offered by the CCL vary in type and extent and depend strongly on the financial and human resources of the individual cancer league as well as on the services made available by other providers.

Cantonal and regional cancer leagues in the German-speaking part of Switzerland and in Liechtenstein

- Aargau Cancer League
- Basel Cancer League
- Bern Cancer League
- Central Switzerland Cancer League
- Eastern Switzerland Cancer League
- Grisons Cancer League
- Liechtenstein Cancer League
- Schaffhausen Cancer League
- Solothurn Cancer League
- Thurgau Cancer League
- Zug Cancer League
- Zurich Cancer League

Cantonal cancer leagues in the French-speaking part of Switzerland and in Ticino

- Fribourg Cancer League
- Geneva Cancer League
- Jura Cancer League
- Neuchâtel Cancer League
- Ticino Cancer League
- Valais Cancer League
- Vaud Cancer League

The board of the Swiss Cancer Research foundation

The board is the highest body of the Swiss Cancer Research foundation (SCR).
It monitors adherence to the foundation goals and manages the foundation's assets.
The board of the SCR meets two to four times a year. It decides – based on the recommendations of the Scientific Committee – on the granting of funds to researchers.

The members of the SCR foundation board serve on a voluntary basis.
The eight members are:

President

Prof. Thomas Cerny, MD
Cantonal Hospital St. Gallen
Member of the board since 2009

Vice president

Prof. Richard Herrmann, MD
Basel University Hospital
Clinical cancer research representative
Member of the board since 2009

Prof. Matthias Egger, MD
University of Bern
Epidemiologic cancer research representative
Member of the board since 2009

Prof. Nicolas von der Weid, MD
University Children's Hospital Basel (UKBB)
Paediatric cancer research representative
Member of the board since 2009

Member of the board up to 2014

Prof. em. Hans Hengartner, PhD
ETH Zurich and University of Zurich
Basic research representative

Prof. Daniel E. Speiser, MD
University of Lausanne
Basic research representative
Member of the board since 2015

Erika Forster-Vannini
Former member of the Swiss Council of States
St. Gallen
Member of the board since 2012

Eduard Holdener, MD
Therwil
Member of the board since 2009

Treasurer

Gallus Mayer
Banking specialist
St. Gallen
Member of the board since 2009

The board of the Swiss Cancer League

The highest body of the Swiss Cancer League (SCL) is the delegates' assembly, to which the representatives of the cantonal and regional cancer leagues belong. Strategic management of the SCL is the responsibility of the board. Board members represent different specialties in the fight against cancer and also the different parts of Switzerland.

The eleven members of the board are:

President

Prof. Jakob R. Passweg, MD
Head physician of Haematology Clinic
Basel University Hospital
Member of the board since 2007

Vice president

PD Gilbert Bernard Zulian, MD
Head physician of Palliative Medicine
Hôpital de Bellerive
Geneva University Hospital
Member of the board since 2009

Prof. Thomas Cerny, MD
Head physician of Oncology/
Haematology
Cantonal Hospital St. Gallen
Member of the board since 1998

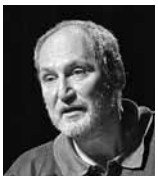
Prof. Daniel Betticher, MD
Head physician of Oncology
HFR Fribourg, Cantonal Hospital
Member of the board since 2006

Lucienne Bigler-Perrotin
Manager
Geneva Cancer League
Member of the board since 2009

Treasurer

Gallus Mayer
Banking specialist
St. Gallen
Member of the board since 2009

Hans Neuenschwander, MD
Head physician of Palliative Care
Regional Hospital of Lugano
Member of the board since 2010



Markus Notter, MD
Radio-Oncology
Lindenhof Hospital, Bern
Member of the board since 2013

Corinne Ullmann
Manager
Schaffhausen Cancer League
Member of the board since 2013

Brigitta Wössmer, PhD
Head psychologist of Psychosomatics
Basel University Hospital
Member of the board since 2011

Karin Zimmermann
Registered nurse / Scientific staff
member
Bern University Hospital
Member of the board since 2014

The Scientific Committee

Members of the Scientific Committee in 2015 (from left to right): Simone Benhamou, Pedro Romero, Martin Pruschy, Freddy Radtke, Ruth Chiquet-Ehrismann, Jürg Schwaller, Primo Schär, Beat W. Schäfer, Nancy Hynes (president), Kurt Fritzsche, Friedrich Stiefel, Holger Moch, Maria Blettner, Jörg Beyer, Emanuele Zucca, Hans-Uwe Simon, Silke Gillessen, Rolf Marti (head of the Research, Innovation & Development department of the SCL).
Not pictured: Curzio Rüegg.

Criteria for high-quality cancer research

The quality of research grant applications is evaluated according to the following criteria:

- Cancer relevance: Is the proposed research project expected to contribute important new observations or knowledge on the causes, prevention, or treatment of cancer?
- Originality or socioeconomic significance: Is the proposed research project original, innovative (basic research projects), or of socioeconomic importance (clinical or epidemiologic projects)?
- Choice of methodology: Have the most appropriate methods for realization of the project been chosen?
- Feasibility: Is the project feasible in terms of finances, human resources, and organization?
- Track record: What are the applicant's (or the project group's) previous research achievements?

The Scientific Committee reviews research grant applications according to clear criteria (see box, "Criteria for high-quality cancer research"). In the evaluation of research grant applications, the main criterion is always whether a research project can generate important new findings that will contribute towards improving the prevention or treatment of cancer. The Scientific Committee also rates the originality and feasibility of the research projects – and recommends only the best projects for funding approval. It attaches particular importance to patient-centred research.

The 18 members of the Scientific Committee are recognized experts with outstanding performance and achievements. Together they cover all areas relevant to cancer research.

Since 2015 the members of the Scientific Committee have represented the following disciplines:
– Basic research: 6 members
– Clinical cancer research: 8 members
– Epidemiology and cancer prevention: 2 members
– Psychosocial cancer research: 2 members

Each research grant application is reviewed carefully by several experts. In addition to two members of the Scientific Committee, also international reviewers evaluate the quality of the grant application (see box, "The research grant application review process"). At two meetings of the Scientific Committee per year, the grant applications are discussed in depth and ranked on a list. Based on the ranking list the boards of the SCR and SCL decide which projects will be approved for funding. Unfortunately, as the financial means are limited, not all high-quality grant applications can be funded. Funding goes exclusively to industry-independent research projects.

In 2014 the Scientific Committee reviewed 167 research grant applications. Once again, more than half of the grant applications submitted were in basic research. On average, each Scientific Committee member reviewed 19 grant applications.

Operational support for the Scientific Committee's important tasks and responsibility is provided by the Research, Innovation & Development department of the SCL. It organizes the calls for and the peer review of research grant applications, makes the grant payments in annual increments, and receives the interim and final research reports.

The research grant application review process

The grant application is submitted online.
↓
The grant application is sent to two members of the Scientific Committee for review.
↓
The two Scientific Committee members recommend external reviewers.
↓
The Research, Innovation & Development department of the SCL asks the external reviewers to review the grant application.
↓
The grant application is reviewed. Four to six reviews are obtained for each grant application, two of which are by Scientific Committee members.
↓
The grant application and the reviews are discussed in detail at the biannual meeting of the Scientific Committee.
↓
After the meeting, the Research, Innovation & Development department writes up detailed minutes and creates a ranking list of all grant applications discussed, following the Scientific Committee's recommendations.
↓
The ranking list is forwarded to the boards of the SCR and SCL. The boards make the final funding decision.
↓
The grant applicant is informed of the decision by the Research, Innovation & Development department. Reviewer comments are fed back to the applicant anonymously.

President

Prof. Nancy Hynes, PhD
Friedrich Miescher Institute for
Biomedical Research (FMI)
Basel
Member since 2015

President *up to 2014*

Prof. Martin Fey, MD
Department of Medical Oncology
Bern University Hospital
Bern

Basic research

Prof. Ruth Chiquet-Ehrismann, PhD
Friedrich Miescher Institute for
Biomedical Research (FMI)
Basel
Member since 2013,
passed away in September 2015

Prof. Pedro Romero, MD
Ludwig Institute for Cancer Research
University of Lausanne
Lausanne
Member since 2015

Member up to 2014

Prof. Adrian Ochsenbein, MD
Department of Medical Oncology
Bern University Hospital
Bern

Prof. Freddy Radtke, PhD
Swiss Institute for Experimental Cancer
Research (ISREC)
Swiss Federal Institute of Technology
Lausanne (EPFL)
Epalinges
Member since 2007

Prof. Primo Schär, PhD
Department of Biomedicine
University of Basel
Basel
Member since 2010

Prof. Jürg Schwaller, MD
Department of Biomedicine
University Hospital Basel
Basel
Member since 2013

Clinical research

Prof. Jörg Beyer, MD
Department of Oncology
University of Zurich
Zurich
Member since 2015

Prof. Silke Gillessen, MD
Department of Oncology/Haematology
Cantonal Hospital St. Gallen
St. Gallen
Member since 2013

Prof. Holger Moch, MD
Institute of Surgical Pathology
University Hospital Zurich
Zurich
Member since 2006

Prof. Martin Pruschy, PhD
Department of Radiation Oncology
University Hospital Zurich
Zurich
Member since 2010

Prof. Curzio Rüegg, MD
Department of Medicine
University of Fribourg
Fribourg
Member since 2013

Prof. Beat W. Schäfer, PhD
Department of Oncology
Children's Hospital Zurich
Zurich
Member since 2012

Prof. Hans-Uwe Simon, MD
Institute of Pharmacology
University of Bern
Bern
Member since 2008

PD Emanuele Zucca, MD
Oncology Institute of Southern
Switzerland (IOSI)
Ospedale San Giovanni
Bellinzona
Member since 2013

Psychosocial research

Prof. Kurt Fritzsche, MD
Department of Psychosomatic
Medicine and Psychotherapy
Freiburg University Hospital
Freiburg im Breisgau, Germany
Member since 2009

Prof. Friedrich Stiefel, MD
Liaison Psychiatry Service
Lausanne University Hospital (CHUV)
Lausanne
Member since 2007

Epidemiologic research

Prof. Simone Benhamou, PhD
French National Institute of Health and
Medical Research (INSERM)
Paris, France
Member since 2011

Prof. Maria Blettner, PhD
Institute of Medical Biostatistics
Epidemiology and Informatics (IMBEI)
Johannes Gutenberg University Mainz
Mainz, Germany
Member since 2010

Prizes for outstanding achievements in cancer research and the fight against cancer

In 2014 the Robert Wenner Prize for excellent researchers under the age of 45 was awarded to Dr Mohamed Bentires-Alj at the Friedrich Miescher Institute for Biomedical Research (FMI) in Basel for his work contributing to a better understanding of molecular processes in breast cancer cells. The Swiss Cancer League awarded the Cancer Prize 2014 to Prof. Felix Gutzwiller, MD, for his many years of service in support of comprehensive health promotion. The Swiss Bridge Award was given to two researchers, Prof. Laurence Zitvogel, MD, and Prof. Adrian Ochsenbein, MD, who shared the 500 000 franc prize for their research on certain aspects of immunotherapy in oncology.

The Robert Wenner Prize was awarded in 2014 to Mohamed Bentires-Alj, who has a PhD in pharmacology. Dr Bentires-Alj studied at the University of Liege in Belgium and subsequently conducted research at Harvard Medical School in Boston before joining the FMI. The award jury cited his and his team's findings in Switzerland. The research results describe what breast cancer stem cells form metastases, for instance, and identify resistance mechanisms to therapy in breast cancer.

The winner of the Robert Wenner Prize Mohamed Bentires-Alj with the former president of the Scientific Committee Martin Fey and the president of the Swiss Cancer League Jakob R. Passweg (from left to right).

Ori Schipper, PhD
Communication officer for Research, Innovation & Development department, Swiss Cancer League

Numerous findings with clinical importance

Bentires-Alj's research group uses transgenic mice and 3D cultures of human cells to investigate the interplay between healthy breast tissue and cancer cells. The group's numerous findings with clinical relevance include identification of a protein called SHP2 as playing a key role in breast cancer stem cells inducing metastasis. If in the future this protein can be blocked – several pharmaceutical companies are already at work to find SHP2 inhibitors – medicine will possibly for the first time have an approach that prevents metastasis.

Another important finding of Bentires-Alj's research laboratory is the discovery of a mechanism of therapy resistance in triple-negative breast cancer. The cells of this particularly aggressive and currently incurable form of cancer fend off attack by new drugs by switching to complementary signalling pathways. To fight this type of breast cancer, possibly several drugs should be administered at the same time that disconnect not only the main signalling pathway but also other pathways. Whether or not this combined targeting proves successful will soon be shown: A clinical trial based on Bentires-Alj's insights is in preparation at the University of Basel.

Outstanding networker

But Bentires-Alj achieves impressive results not only in his research laboratory. He is also decisively involved in the European network of breast cancer researchers. He is president of the European Network for Breast Development and Cancer, which since 2009 has already organized seven conferences where researchers exchange information and initiate new collaboration projects. In addition, Bentires-Alj also co-founded a network at the regional level: the Basel Breast Consortium (www.BaselBC.org), which is committed to promoting interdisciplinary basic, clinical, and translational research projects.

Robert Wenner Prize

The Robert Wenner Prize was endowed by Robert Wenner, a Basel gynaecologist who died in 1979. Since 1983 the Robert Wenner Prize has been awarded by the Swiss Cancer League to cancer researchers in Switzerland under the age of 45. The award winners receive 100 000 francs, with 80 000 francs earmarked for an ongoing research project and 20 000 francs as discretionary funds.
www.krebsliga.ch/rwp

Felix Gutzwiller at the award ceremony of the Cancer Prize.

A life for public health

The Swiss Cancer League awarded the Cancer Prize 2014 to Prof. Felix Gutzwiller, MD, who is a preventive medicine and health policy expert. Gutzwiller was honoured for his great efforts to support comprehensive health promotion, early detection, and prevention during the many years he served as director of the Institutes of Social and Preventive Medicine at the University of Lausanne (1983–1988) and the University of Zurich (1988–2013). He was also honoured for his commitment to Switzerland as a research hub.

Gutzwiller has dedicated his life to improving public health. The social and political concept of public health aims at health promotion, disease prevention, and increasing the quality of life of the population as a whole. Also as a politician dealing with health and science, Gutzwiller has supported not only good framework conditions for research in Switzerland but also comprehensive tobacco prevention and a national cancer registry.

Cancer Prize

The Swiss Cancer League has awarded the Cancer Prize of 10 000 francs since 1960. The prize recognizes persons who have made outstanding contributions to cancer research or outstanding efforts to promote research activities in service of prevention, early detection, and treatment of cancer.
www.krebsliga.ch/krebspreis

Immunotherapy – beacon of hope

In 2014 the Swiss Bridge Foundation chose to grant the Swiss Bridge Award for Cancer Research with a prize of 500 000 francs to research in the field of cancer immunotherapy. Immunotherapy is currently a very promising new form of therapy. It stimulates the human immune system to help it eliminate cancer cells. Two researchers received the award for their projects' excellence in this field: Prof. Laurence Zitvogel, MD, at the Gustave Roussy Comprehensive Cancer Centre in France, and Prof. Adrian Ochsenbein, MD, at Bern University Hospital in Switzerland. Prof. Zitvogel received 250 000 francs for her work. She and her team are investigating the role of the intestinal flora with immunotherapeutic treatments and effects. Certain types of intestinal bacteria may reinforce or undermine the effects of immunotherapy.

Prof. Ochsenbein received 250 000 francs for his work. He and his team are studying cancer stem cells, which are more resistant to treatments than other cells and in addition can divide infinitely. The stem cells are responsible for recurrence and proliferation of tumours. Ochsenbein's team has developed an immunotherapy that can possibly eliminate also leukaemia stem cells. The research group will use the award money to continue in-depth research on this immunotherapy.

A total of 45 research groups applied for the Swiss Bridge Award 2014. A scientific jury of international experts reviewed the project descriptions in a two-stage process and subsequently nominated the two research projects in France and Switzerland for the award. The Research, Innovation & Development department of the Swiss Cancer League was once again responsible for the call for proposals and coordination of the project evaluation.

Swiss Bridge Award

The Swiss Bridge Foundation was founded in 1997 at the initiative of Thomas Hoepli, foundation board member, with the support of the Swiss Cancer League. The aim of the foundation is to financially support high-quality cancer research projects in Switzerland and other countries with the help of charitable donors and foundations. Since its founding, the Swiss Bridge Foundation has awarded more than 25 million francs for research work in Belgium, Brazil, England, France, Germany, Israel, Italy, Norway, Spain, Sweden, and Switzerland.

Ori Schipper, PhD
Ori Schipper graduated in plant molecular biology and followed a postgraduate course in science journalism.
Since December 2014 he is communication officer of the Research, Innovation & Development department of the Swiss Cancer League and the Swiss Cancer Research foundation.
Tel. +41 (0)31 389 93 31
ori.schipper@krebsliga.ch
www.krebsliga.ch/forschung
www.krebsforschung.ch

Implementation of the National Strategy Against Cancer 2014–2017

National law on cancer registration within reach

The National Strategy Against Cancer 2014–2017 defines the creation of a national law on cancer registration as a goal in the field for action "Epidemiology/monitoring". Parliamentary discussion on the draft bill has now begun; the goal is thus within reach.

Cancer registries are an indispensable basis for tracking the development of cancer and, for instance, for uncovering clusters of cases. Only with the data contained in cancer registries can an effective cancer policy for Switzerland be envisaged. Although there are currently many cantonal or regional cancer registries in Switzerland, the situation continues to be unsatisfactory in many ways: As there is no reporting obligation, not all new cases are registered, and the registration methods used differ. As a result, there is no nationally standardized data set. And in many places, the regulations and legal framework conditions are inadequate for use of cancer registration data for research purposes.

For the five organizations assembled in Oncosuisse, the policy platform for the fight against cancer, it is extremely important to have a complete population-based cancer registration anchored in a national law. The goal is to harmonize the differences between the cantons in the legal framework conditions for handling sensitive patient data and to pave the way for the urgently needed complete capturing of all new cancer cases in Switzerland. Only on the basis of this data registration is it possible to measure, quantitatively and qualitatively, successes of systematic early detection and screening programmes or differences in cancer treatment quality. Indicators of this kind form the basis for improved perspectives for the prevention, early detection, and treatment of cancer.

The Federal Council submitted a draft bill and a message to Parliament on a national law on cancer registration on 29 October 2014. For cancer registration, the draft bill regulates the collecting, registration, and sharing of data for evaluation and publication at the national level. The bill provides for the introduction of mandatory reporting of new diagnosed cases of cancer by physicians, hospitals, and other private and public institutions in the healthcare system. Oncosuisse believes that the bill largely meets the requirements of a modern disease-monitoring system and is well aligned with its intended purpose.

Rolf Marti, PhD
Head of Research, Innovation & Development department, Swiss Cancer League

Ori Schipper, PhD
Communication officer for Research, Innovation & Development department, Swiss Cancer League

The parliamentary deliberation began at the end of May 2015. For this the Committee of Social Security and Health of the National Council also invited representatives of the Swiss Cancer League, the National Institute for Cancer Epidemiology and Registration (NICER), the Swiss Childhood Cancer Registry, and the Ticino Cancer Registry to a hearing. For opinion formation the following questions and answers were developed at the meeting.

Questions and answers on the draft of a national law on cancer registration

Why are cancer registry data needed, and whom do the data serve?

The cantonal and regional cancer registries collect data on the incidence and outcomes of cancers in Switzerland. These data are an indispensable basis for effective public health policy and for future-oriented patient care. The data aid evaluation of the quality of care, diagnosis, and treatment. They also inform on how to improve prevention measures. Medical professionals, specialist organizations, researchers, and politicians must have access to these epidemiologic data for healthcare planning purposes and for making evidence-based decisions on the prevention and treatment of cancer.

Why is a national law to regulate cancer registration needed?

Up to now, Switzerland has lacked a legal basis for complete population-based and standardized registration of cancer data, and the procedures in the different cantons vary widely. The national law takes up special features of cancer registration (for example, the monitoring purpose of cancer registration, the necessity to collect complete data) and regulates them in a national law. The national law is thus a meaningful complement to other laws in the health area, such as the Federal Act on Research involving Human Beings.

How does the national law regulate data collection?

Up to now, the reporting of new cancer cases to the cancer registries has been voluntary. Also, not all cantons have participated in registering cancer data, and the national cancer data are therefore incomplete. In addition, the framework conditions for data collection differ from canton to canton. The planned law lays down how cancer data will be collected, registered, and shared in a standardized manner, so that the data can be evaluated and published at the national level. In this way, the law ensures standardized and complete cancer registration nationwide.

Does the draft adequately consider data protection and the right to protection of one's individual sphere of life?

The national law attaches great importance to protection of personal privacy and secure handling of cancer registration data. Compared to the current situation, it substantially expands personal rights (for example, it gives patients right of veto and right to information).

On what structures and experience does the national law build on?

The national law bases on the previous structures of cancer registration. Registration continues to take place in the cantonal cancer registries. Data about cancers in children and young people are collected in the Swiss Childhood Cancer Registry. A national cancer registry authority compiles the data collected, evaluates it annually, and informs the public of the results.

Will the new national law incur additional costs, and if yes, in what amount?

The draft bill requires the federal government to run and finance the national cancer registry authority and the Swiss Childhood Cancer Registry. In addition, it is to provide encryption services (pseudonymization services) and tools for standardized data collection and data transfer. The resulting federal costs are approximately 2.5 to 3 million Swiss francs per year. In 2014 the cost to the federal government was 1.4 million francs. Thus, for the federal government, there are additional costs of 1.1 to 1.6 million francs.

Research funding by the cantonal and regional cancer leagues

Overview of the activities of the Cancer League of both cantons of Basel

The Swiss Cancer League is organized as an association made up of 19 cantonal and regional cancer leagues and the umbrella organization, the Swiss Cancer League. In 2014 12 cantonal cancer leagues, including the Cancer League of both cantons of Basel (CLBB), gave nearly 3.2 million francs to cancer research projects and institutes. As a cantonal cancer league in a university canton, the CLBB sees the awarding of research grants as an especially important and primary task.

The Cancer League of both cantons of Basel (CLBB) was founded in 1957 by two Basel physicians, Prof. Rudolf Nissen, MD and professor of surgery, and Prof. Theodor Koller, MD and professor of gynaecology. The first ten years were dedicated to building up welfare services (today's psychosocial services), screening examinations and early detection of cervical cancer, and publicity work.

The fourth president of the CLBB was Prof. Robert Wenner, the first chief physician for gynaecology at Liestal Cantonal Hospital. Cancer research was funded for the first time during his term as president of the CLBB (1966–1971) to the amount of 10 000 francs,

The Scientific Committee of the Cancer League of both cantons of Basel (from left to right): Prof. Primo Leo Schär, PhD, Prof. Alfred Zippelius, MD, PD Seraina Schmid, MD, Prof. Lukas Bubendorf, MD, Prof. Markus Zuber, MD (president), Prof. Georg A. Holländer, MD, Prof. Ruth Chiquet-Ehrismann, PhD, Prof. Giulio Spagnoli, MD, and Mohamed Bentires-Alj, PhD.

Prof. Michael J. Mihatsch, MD
Vice president of the Cancer League of both cantons of Basel

Prof. Markus Zuber, MD
President of the Scientific Committee of the Cancer League of both cantons of Basel

which was approximately one-twelfth of the expenditure in that year. At the same time, an oncology department was created at the Bürgerspital, which today is University Hospital Basel. The Cancer Registry of both cantons of Basel was also established in that same year. The Subcommittee for Cancer Research, with three members, was formed in 1969.

In 1977 Wenner and his wife founded the Robert Wenner foundation to support cancer research. Since 1983 the Swiss Cancer League has regularly awarded the Robert Wenner Prize recognizing excellence in cancer research.

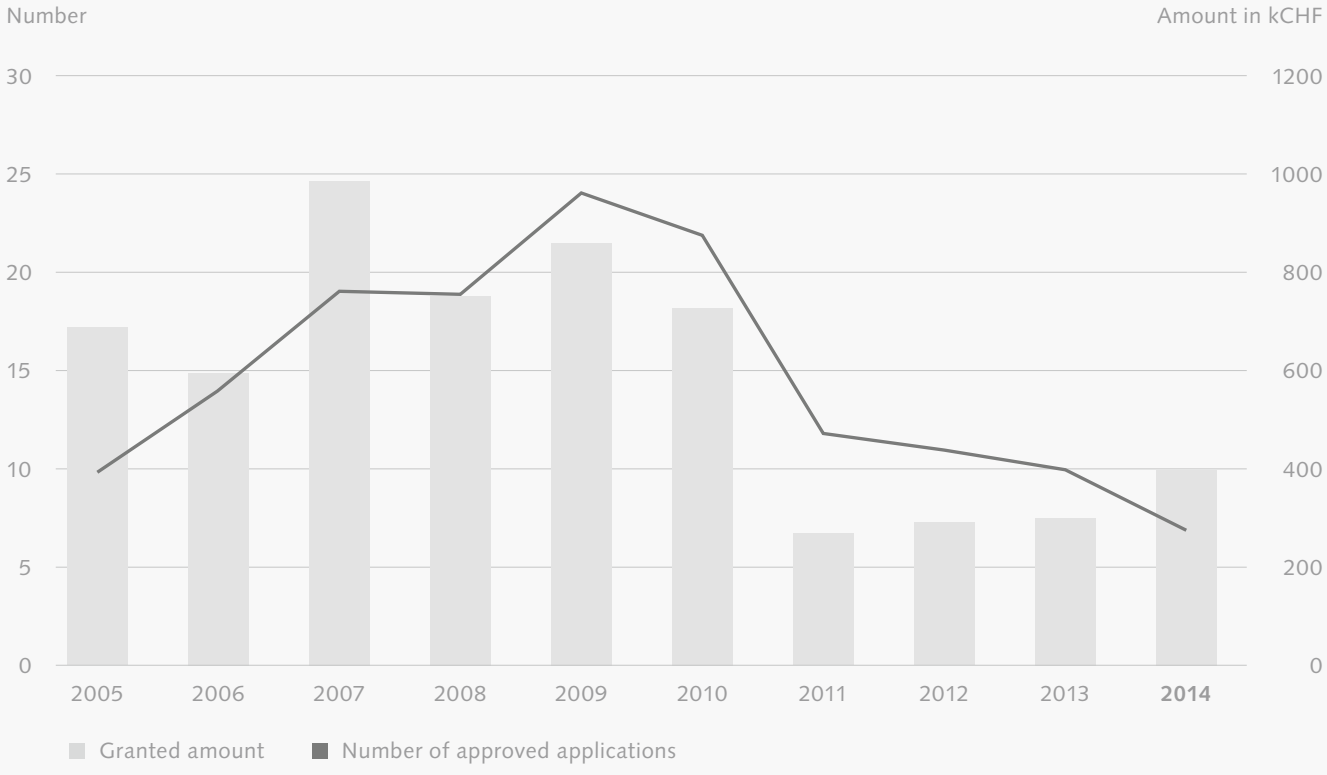
In the years following, the CLBB, which is a cantonal cancer league in a university canton, came to see funding cancer research as an especially important and primary task. Funding reached a high point in 1997, with a total of 1 200 000 francs given to research, which was two-thirds of the annual expenditure in that year.

The CLBB continues this tradition still today, although unfortunately at a lower level due to the global financial crisis. In the last ten years the CLBB has supported 148 research projects with a total amount of approximately 6 million francs (see figure). Today, the funds available are granted in equal parts to early career researchers (as start-up financing) and established researchers (for pilot projects or as co-funding for larger studies).

The CLBB funds research in accordance with the following principles:

- CLBB supports research projects in all areas of cancer research: basic research, clinical research, and research in the areas of psycho-oncology, social and palliative medicine.
- Not the topic but only the quality of a project determines its worthiness for funding.
- The objective is that the results of funded projects are published in renowned scientific journals.

Figure
Funding of research projects 2005–2014



To ensure the quality of the research projects funded, the board of the CLBB relies on an independent Scientific Committee, consisting of nine members (see photo) who work on a voluntary basis. The Scientific Committee meets once or twice a year to assess the research grant applications submitted with regard to their scientific quality and possible value for cancer prevention, tumour detection, and tumour treatments. All of the members are distinguished cancer researchers, and they also contribute their experience gained on similar committees, such as at the Swiss National Science Foundation or Oncosuisse.

The financial resources for research come from donations and bequests – or are raised at events organized specially for research funding, such as the cancer gala. To inform the regional population, every two years the CLBB organizes public events at which researchers who received grants give short presentations explaining how their work has contributed towards understanding cancer and how their findings benefit patients with cancer.

Already on the occasion of the founding of the CLBB, Rudolf Nissen, in an appeal to the public, emphasized that the fight against cancer can only succeed if as many people as possible help. The CLBB continues to be committed to that principle: It encourages its members to be interested in research and offers them the opportunity to personally get to know the researchers that they have supported. The CLBB is convinced that there can be no progress without research.

Prof. Michael J. Mihatsch, MD
Michael Mihatsch is vice president of the Cancer League of both cantons of Basel. He is a kidney specialist, and from 1988 up to his retirement (Emeritus) in 2007 he headed the Department of Pathology at Basel University Hospital. Since then he has been a consultant in renal pathology at the department.

Prof. Markus Zuber, MD
Markus Zuber is head of the Department of Surgery at Cantonal Hospital Olten and medical director of Solothurn Hospitals. He has served as president of the Scientific Committee of the Cancer League of both cantons of Basel since 2000.

Contact
Karin Fäh
Manager, Cancer League of both cantons of Basel
Tel. +41 (0)61 319 99 88
k.faeh@klbb.ch
www.klbb.ch

List of funded research projects and institutions in 2014

The list shows the financial contributions granted in 2014.

Aargau Cancer League

Datta Niloy | Systematic review and meta-analysis of re-irradiation with hyperthermia for loco-regional recurrent breast cancer
Institut für Radio-Onkologie, Kantonsspital Aarau, Aarau
CHF 47 761.– | Duration: 1.1.2014 – 31.12.2014

Basel Cancer League

Bentires-Alj Mohamed | Effects of PIK3CA mutations on mammary cell fate and breast cancer
Friedrich Miescher Institut für biomedizinische Forschung (FMI), Basel
CHF 100 000.– | Duration: 1.6.2014 – 31.5.2016

Dirnhofer Stephan | Familial primary mediastinal large B-cell lymphoma: elucidation of its pathogenesis by in-depth genomic analysis
Institut für Pathologie, Universitätsspital Basel, Basel
CHF 35 000.– | Duration: 1.7.2014 – 30.6.2015

Hemmings Brian A. | Sensitization to chemotherapy by interfering with MNK pathway in human gliomas
Friedrich Miescher Institut für biomedizinische Forschung (FMI), Basel
CHF 70 000.– | Duration: 1.9.2014 – 30.6.2015

Hirt Christian | Characterization of TCR-repertoire in primary colorectal cancer and evaluation of their functional potential
Departement Biomedizin, Universitätsspital Basel, Basel
CHF 25 000.– | Duration: 1.9.2014 – 30.11.2014

Matter Matthias | Identification of DNA damage, which promote liver cancer development
Institut für Pathologie, Universitätsspital Basel, Basel
CHF 20 000.– | Duration: 1.10.2014 – 31.3.2016

Mindt Thomas L. | Development of 99mTc-tricarbonyl-based radiotracers with improved pharmacokinetic profiles for efficient tumour targeting
Klinik für Radiologie und Nuklearmedizin, Universitätsspital Basel, Basel
CHF 70 000.– | Duration: 1.7.2014 – 1.3.2015

Müller Philipp | The antibody drug conjugate T-DM1 meets anti-tumour immunity – implications for combinations with immunotherapy
Departement Biomedizin, Universitätsspital Basel, Basel
CHF 80 000.– | Duration: 1.7.2014 – 30.6.2016

Bern Cancer League

Banz Vanessa | Targeting YAP for the treatment of hepatocellular carcinoma using verteporfin and VisudyneTM: a promising new strategy
Universitätsklinik für Viszerale Chirurgie und Medizin, Inselspital, Bern
CHF 100 000.– | Duration: 1.1.2015 – 31.5.2016

Berezowska Sabina | Resistance mechanisms to ALK inhibitors in EML4-ALK positive non-small cell lung cancer (NSCLC) – the role of autophagy
Institut für Pathologie, Universität Bern, Bern
CHF 32 000.– | Duration: 1.10.2014 – 30.9.2015

Gloy Viktoria | Preventing and reducing adverse events in radioiodine therapy of thyroid cancer: a systematic review and meta-analysis
Departement Klinische Forschung, Universität Bern, Bern
CHF 45 000.– | Duration: 1.6.2015 – 31.12.2016

Hall Sean | Role of PD-L1-expressing pericyte-like cells in non-small cell lung cancer
Universitätsklinik für Thoraxchirurgie, Inselspital, Bern
CHF 60 000.– | Duration: 1.2.2015 – 31.1.2016

Peng Ren-Wang | Functional identification and molecular targeting of human lung cancer stem cells
Universitätsklinik für Thoraxchirurgie, Inselspital, Bern
CHF 105 000.– | Duration: 1.4.2015 – 30.9.2015

Sokol Lena | cDNA library for (mi)RNA detection in distinct cell populations or archived FFPE colorectal cancer tissue
Institut für Pathologie, Universität Bern, Bern
CHF 60 000.– | Duration: 1.3.2015 – 28.2.2016

Central Switzerland Cancer League

Diebold Joachim | Lung cancer survival in Central Switzerland in the era of personalized medicine
Zentralschweizer Krebsregister, Luzerner Kantonsspital, Luzern
CHF 50 000.– | Duration: 1.1.2013 – 31.12.2016

Eastern Switzerland Cancer League

Ludewig Burkhard | Systems biology approach to molecularly characterize the lung cancer microenvironment
Institut für Immunbiologie, Kantonsspital St. Gallen, St. Gallen
CHF 100 000.– | Duration: 1.1.2012 – 31.12.2015

Magaya-Kalbermatten Natalie | Master studies in palliative care at the King's College London in London, United Kingdom
Klinik für Onkologie und Hämatologie, Kantonsspital St. Gallen, St. Gallen
CHF 5000.– | Duration: 1.1.2014 – 31.12.2015

Ansari Marc | Association of a CTH gene variant with veno-occlusive disease in children receiving busulfan before haematopoietic stem cell transplantation
Département de pédiatrie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 50 500.– | Duration: 1.1.2013 – 31.12.2014

Bridevaux Pierre-Olivier | Short-term preoperative rehabilitation for patients with lung cancer: a randomized trial
Service de pneumologie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 50 000.– | Duration: 1.1.2014 – 31.12.2014

Bühler Léo | New radioisotopes for the treatment of brain and pancreatic cancer
Service de chirurgie viscérale et de transplantation, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 120 000.– | Duration: 1.1.2013 – 31.12.2014

Cohen Marie | Novel therapeutic approaches against ovarian cancer recurrence
Département de gynécologie et d'obstétrique, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 99 168.– | Duration: 1.1.2012 – 31.12.2014

Curran Joseph | The 5'UTR fingerprint: a new diagnostic marker for breast cancer
Département de microbiologie et médecine moléculaire, Université de Genève, Genève
CHF 106 909.– | Duration: 1.1.2013 – 31.12.2015

Farina Annarita | Identification and quantification of clinically relevant biomarkers for difficult to diagnose digestive malignancies
Département de science des protéines humaines, Université de Genève, Genève
CHF 130 000.– | Duration: 1.1.2014 – 31.12.2015

Kruithof Egbert | Regulation of procoagulant activities of acute promyelocytic leukaemia cells
Département des spécialités de médecine, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 8000.– | Duration: 1.1.2013 – 31.12.2014

Le Gal Frédérique | Skin cancer screening using high-sensitivity infrared imaging
Service de dermatologie et vénérologie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 30 000.– | Duration: 1.1.2013 – 31.12.2014

Le Gal Frédérique | Beta-blockers in the adjuvant treatment of melanoma, an interventional clinical study
Service de dermatologie et vénérologie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 133 178.– | Duration: 1.1.2014 – 31.12.2015

Mandriota Stefano | The ATM/p53 signalling pathway in the regulation of cellular senescence
Département de pédiatrie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 100 230.– | Duration: 1.1.2012 – 31.12.2014

Martinou Jean-Claude | Role of the mitochondrial pyruvate carrier in the proliferation and metastasis of breast cancer cells
Département de biologie cellulaire, Université de Genève, Genève
CHF 96 000.– | Duration: 1.1.2013 – 31.12.2014

Pittet-Cuénod Brigitte | Which is the best technique of reconstruction after mastectomy? A retrospective evaluation of three techniques
Chirurgie plastique reconstructive et esthétique, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 11 555.– | Duration: 1.1.2014 – 31.12.2014

Preynat-Seauve Olivier | Identification of miRNA targets for glioblastoma using a novel in vitro model
Laboratoire d'immuno-hématologie transfusionnelle, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 99 986.– | Duration: 1.1.2013 – 31.12.2015

Reith Walter | Identifying the cellular functions and regulatory networks that underlie the link between microRNA-155 and cancer
Département de pathologie et d'immunologie, Université de Genève, Genève
CHF 111 159.– | Duration: 1.1.2012 – 31.12.2014

Walker Paul | Improving the efficacy of glioma immunotherapy
Service d'oncologie, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 88 054.– | Duration: 1.1.2014 – 31.12.2016

Wehrle-Haller Bernard | Kinase-independent functions of the receptor tyrosine kinase c-kit in the persistence and adhesion of cancer stem cells to their environmental niche
Département de physiologie cellulaire et métabolisme, Centre médical universitaire (CMU), Genève
CHF 70 500.– | Duration: 1.1.2013 – 31.12.2015

Grisons Cancer League

Cathomas Richard | Clinical research for the long-term follow-up of patients
Onkologie/Hämatologie, Kantonsspital Graubünden, Chur
CHF 40 000.– | Duration: 1.9.2014 – 31.12.2016

Cathomas Richard | Project on testicular cancer
Onkologie/Hämatologie, Kantonsspital Graubünden, Chur
CHF 20 000.– | Duration: 1.9.2014 – 31.12.2016

Zwahlen Daniel | 3D in vitro tumour model using a self-developed microfluidic chip for spheroids of bladder cancer cells
Radio-Onkologie, Kantonsspital Graubünden, Chur
CHF 20 000.– | Duration: 1.9.2014 – 31.12.2015

Neuchâtel Cancer League

Bulliard Jean-Luc | Sun protective behaviour and knowledge in primary and secondary schoolchildren in Western Switzerland
Institut universitaire de médecine sociale et préventive, Centre hospitalier universitaire vaudois (CHUV), Lausanne
CHF 5000.– | Duration: 1.5.2014 – 31.12.2015

Schaffhausen Cancer League

Albisser Heidi | Day to day ethics in out-of-hospital health care services: development of an ethical decision-making model
Institut für Pflegewissenschaft, Universität Basel, Basel
CHF 20 000.– | Duration: 1.10.2014 – 30.9.2017

Thurgau Cancer League

Legler Daniel | Breast cancer project
Biotechnologie Institut Thurgau, Universität Konstanz, Kreuzlingen
CHF 33 333.– | Duration: 1.1.2013 – 31.12.2015

Ticino Cancer League

Civenni Gianluca | Isolation, expansion in vitro and characterization of epithelial stem cells from human prostate biopsies
Istituto Oncologico di Ricerca (IOR), Istituto Oncologico della Svizzera Italiana (IOSI), Bellinzona
CHF 100 000.– | Duration: 1.1.2014 – 31.12.2014

Frattini Milo | Mirna: a new mechanism of MGMT silencing in glioblastoma with a possible effect on temozolomide sensitivity
Istituto cantonale di patologia, Locarno
CHF 50 000.– | Duration: 1.1.2014 – 31.12.2014

Grassi Fabio | Role of the chemokine receptor CXCR4 in the pathophysiology of central nervous system infiltration in T-cell leukaemia
Istituto di Ricerca in Biomedicina (IRB), Università della Svizzera italiana, Bellinzona
CHF 50 000.– | Duration: 1.1.2014 – 31.12.2014

Roggero Enrico | Comparison study to evaluate the impact of a multi-disciplinary board on the treatment of patients with prostate cancer
Istituto Oncologico della Svizzera Italiana (IOSI), Bellinzona
CHF 50 000.– | Duration: 1.1.2014 – 31.12.2014

Zurich Cancer League

Arlt Matthias | Importance of BHLHB9 in dormancy, reactivation and chemo-resistance of osteosarcoma metastases
Departement für Orthopädie, Universitätsklinik Balgrist, Zürich
CHF 71 850.– | Duration: 1.1.2014 – 31.12.2015

Manz Markus | Intestinal microbial changes in patients with acute leukaemia during chemotherapy – impact on infections, tumour response and outcomes
Klinik für Hämatologie, Universitätsspital Zürich, Zürich
CHF 23 700.– | Duration: 1.1.2014 – 31.12.2015

Müller Anne | Epigenetic silencing of tumour suppressor genes in the pathogenesis of diffuse large B-cell lymphoma
Institut für Molekulare Krebsforschung, Universität Zürich, Zürich
CHF 77 215.– | Duration: 1.1.2013 – 31.12.2015

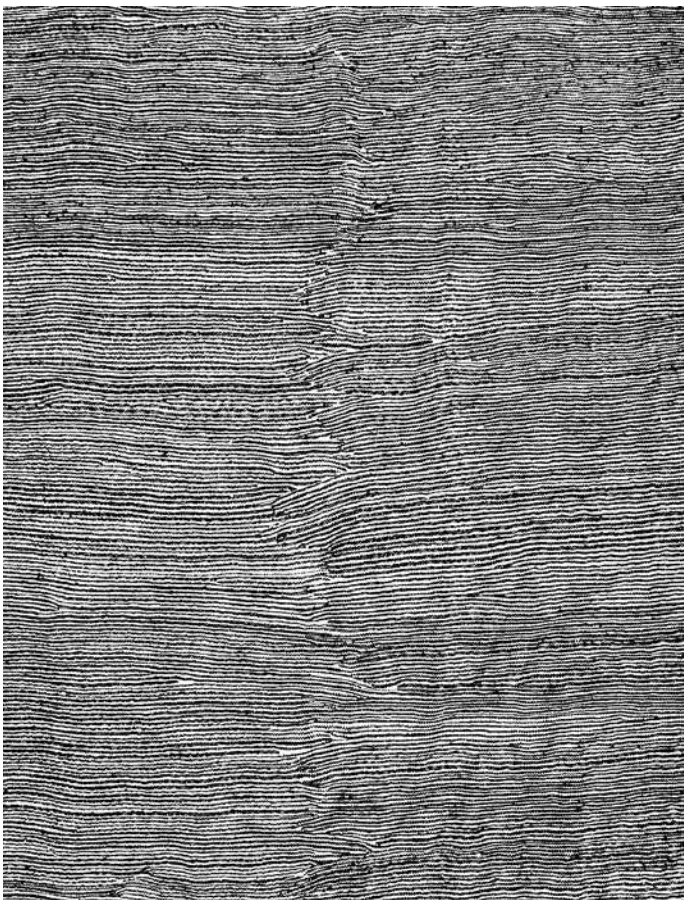
Münz Christian | Boosting of NY-ESO-1 specific re-directed T-cells
Institut für Experimentelle Immunologie, Universität Zürich, Zürich
CHF 64 545.– | Duration: 1.1.2012 – 31.12.2014

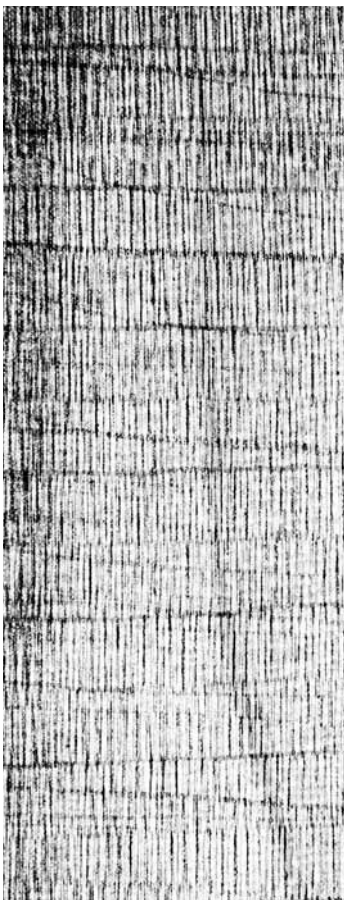
Pruschy Martin | The combined treatment modality of radiotherapy with TH-302
Klinik für Radio-Onkologie, Universitätsspital Zürich, Zürich
CHF 15 000.– | Duration: 1.1.2014 – 31.12.2014

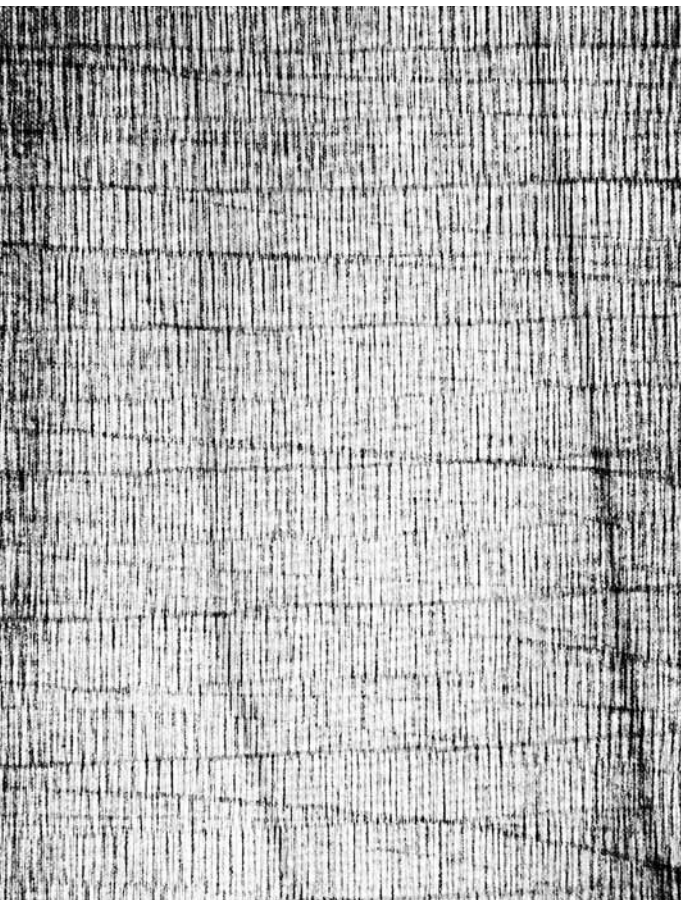
Schäfer Beat | Therapeutic targeting of oncogenic fusion proteins by transcriptional repression
Abteilung Onkologie, Kinderspital Zürich, Zürich
CHF 53 625.– | Duration: 1.1.2014 – 31.12.2016

Shakhova Olga | Delineating the molecular and cellular basis of therapy resistance in metastatic melanoma
Klinik für Onkologie, Universitätsspital Zürich, Zürich
CHF 82 625.– | Duration: 1.1.2014 – 31.12.2016

Weber Achim | Inflammation-driven intestinal carcinogenesis
Institut für Klinische Pathologie, Universitätsspital Zürich, Zürich
CHF 97 371.– | Duration: 1.1.2014 – 31.12.2014







Tumour microenvironment and metastasis

During tumourigenesis, tumour cells acquire capacities that make them independent of homeostatic regulatory mechanisms, resulting in autonomous proliferation, sustained growth, and limitless survival. Among the acquired abilities, invasion and metastasis are those that mostly determine disease outcome. Cancers that are non-invasive and non-metastatic can be efficiently treated by surgery, and most patients are cured, whereas cancers that are locally invasive or have already generated metastases require additional therapies, such as radiotherapy, chemotherapy, or targeted therapies. These cancers might eventually resist or escape treatment, resulting in progression and patients' death. Thus, a significant decrease in cancer-related mortality can only be achieved if cancers can be detected at early stages, before they have started invading the surrounding tissues and have formed metastases, or if metastatic disease can be prevented, controlled, or treated. Achieving these goals is a challenging endeavour. Many laboratories in the world are involved in unravelling mechanisms of tumour progression and metastasis, including ours.

The tumour microenvironment

While many of the mechanisms driving cell transformation and tumour progression involve cell autonomous (genetic and epigenetic) events, cancer cells still depend on stimuli from the immediate or distant surroundings to form clinically relevant tumours. Thus, tumour cells interact with the tissue that they invade like infectious microorganisms interact with their host. Hence the tumour microenvironment is an integrated and essential part of cancer biology. It consists of a wide variety of different "normal" cells, including endothelial cells, pericytes, activated fibroblasts (also referred to as carcinoma-associated fibroblasts), immune and inflammatory cells (e. g. granulocytes, lymphocytes, natural killer cells, monocytes/macrophages) recruited and/or activated in

Curzio Rüegg, MD
Professor and Chair of Pathology, Department of Medicine, University of Fribourg

situ by the growing tumour. In addition, extracellular matrix (ECM) molecules and modifications thereof, nutrients, and metabolic products are further constituents of the microenvironment. The state and effects of the tumour microenvironment are dynamic in space and time and rapidly evolve with tumour progression. The critical role of the tumour microenvironment to tumour progression has been proven by the demonstration that inhibition of tumour angiogenesis brings therapeutic benefits to patients with advanced cancers. Several drugs inhibiting angiogenesis, by neutralizing either angiogenic factors or growth factor receptors, are now in clinical use, mostly in combination with chemotherapy. Immune/inflammatory cells, although they have the potential of killing tumour cells, mostly promote tumour progression. Once recruited to the tumour microenvironment, they are enslaved by cancer cells to provide factors promoting cancer cell survival, migration, invasion, and intravasation into the vascular system. Therapy-induced modifications of the tumour microenvironment contribute to determine therapy outcome. In particular, they may provide cues of resistance to therapy or even favour progression after treatment. Here I will discuss some of the contributions of the tumour microenvironment and tumour-host interaction to tumour progression and metastasis and include examples of research ongoing in our laboratory.

Early cancer detection

Early cancer detection is best achieved when the organ can be examined directly (or through minimally invasive procedures such as colonoscopy) to reveal altered tissue architecture or premalignant/malignant lesions. Examples are cancer, or precancerous lesions, of the skin, cervix, and colon/rectum. In contrast, early detection of precancerous or cancerous lesions in internal organs is difficult, as it is largely based on imaging methods requiring a minimal size of the lesion (5–10 mm). For example, before they become clinically manifest, mammary and lung cancers can be detected through radiological methods (e. g. mammography), but sensitivity and specificity are suboptimal. We have developed a novel approach for the early detection of colorectal cancer and large adenoma based on the response of the host to the growing tumour or precancerous lesions, which is much like the response of the immune/inflammatory system to invading microorganisms, rather than based on the direct detection of cancer cells. In experimental cancer models we observed that circulating leukocytes in tumour-bearing mice have altered gene expression. In a proof-of-concept study using patient-derived leukocytes, we demonstrated that patients with colorectal cancers had a different gene expression profile in these cells[1]. Eventually, through a large clinical study, we discovered and validated a 29-gene panel expressed in circulating mononuclear cells that discriminates patients with large (> 1 cm) adenoma or colorectal cancer vs healthy individuals with a sensitivity of 59 % and 75 %, respectively, and 91 % specificity[2]. The test is now available to the public. This approach demonstrates that tumour host interaction can be exploited for diagnostic purposes and may be extended to other cancers, such as breast cancer.

The metastatic cascade

The formation of a secondary tumour is a complex process involving multiple steps[3]. Epithelial cancer cells first have to invade the surrounding tissue. This occurs through collective cell migration (i. e. as uninterrupted solid finger-like extension of the tumour mass) or single cell migration, the latter normally occurring upon losing epithelial features and gaining mesenchymal characteristics in a process called epithelial-mesenchymal transition. Invasion and intravasation are greatly facilitated by host cells. Monocytes/macrophages present in the tumour mi-

croenvironment stimulate tumour cell migration and intravasation. We have recently shown that activated fibroblasts promote colorectal cancer cell motility and invasion by direct cell-cell contact[4]. Once they enter the blood circulation, cancer cells will strand in a capillary bed at a secondary organ (i. e. lung, liver, bone), from where they can extravasate and migrate into the local tissue. Survival in the new environment is the most critical step in the process of metastasis. Most disseminated tumour cells (DTC) die before they can resume growth. Signals provided by the local environment are essential to allow DTC to survive and outgrow to form metastases. Bone marrow derived cells (BMDC) and inflammatory cells are critical in supporting survival of DTC. In a seminal work, David Lyden's laboratory at Weill Cornell Medical College demonstrated that BMDC mobilized by the primary tumour disseminate in other organs to generate a niche favourable to DTC[5]. As this may occur before tumour cells reach the target organ, the researchers named this the "premetastatic niche". Thus, controlling the mobilization, recruitment, and activation of BMDC and inflammatory cells might be a novel strategy to control metastasis formation. The metastatic niche also includes activated endothelial cells and ECM proteins. For example, deposition of matrix proteins such as tenascin or periostin was shown to promote survival and growth of DTC[6].

Escape from therapy

Cancer therapy is traditionally considered as acting directly on cancer cells, through genotoxic, metabolic, hormonal, or biological effects. However, local (e. g. radiotherapy) or systemic (e. g. chemotherapy) treatments also affect normal tissues. This is well apparent for therapy-induced side effects such as skin inflammation, fibrosis, myelosuppression, or neuro- and cardiotoxicity. In recent years it became clear that the tumour microenvironment and its therapy-induced modification can impact therapy outcome. BMDC and inflammatory cells play a critical role in resistance to therapy. For instance, response to chemotherapy is in part blunted by monocytes/macrophages in the tumour microenvironment: Cytotoxic drugs induce cancer cells to produce factors that recruit monocytes/macrophages, which in turn promote tumour progression and metastasis. Similarly, anti-angiogenic therapy mobilizes BMDC, which confer resistance to treatment through the production of alternative angiogenic, survival, and motility factors. We have shown that tumours locally recurring after adjuvant radiotherapy are more metastatic than primary tumours. The mechanism for this paradoxical effect involves suppression of tumour angiogenesis, resulting in increased tumour hypoxia and hypoxia-mediated mobilization of specialized BMDC that recruit to the lung and form a premetastatic niche[7].

Tumour dormancy and metastasis control

In breast cancer about half of the relapsing patients do so five years or later after therapy. This suggests that DTC may remain "dormant" for years before resuming growth. Three mechanisms have been proposed to explain dormancy: cellular dormancy (i. e. the DTC enter a state of prolonged cell cycle arrest), angiogenic dormancy (i. e. cancer cells are unable to induce angiogenesis, and cell proliferation is balanced by cell death), and immunological dormancy (i. e. cancer cells are kept in check by the immune system). The latter two mechanisms are clearly host-derived events. Prolonging dormancy may be considered as a new therapeutic strategy. To this end it is essential to understand mechanisms promoting exit from dormancy. To address this question we generated a model of therapy-induced dormancy. We observed that dormant cells elicit a strong immune/inflammatory reaction. We demonstrated

that myelomonocytic cells and T-cells are necessary to maintain DTC in a state of prolonged dormancy. Through genome-wide screens, we are now identifying tumour-derived factors capable of inducing dormancy with the long-term aim to develop a therapeutic strategy that may be added after adjuvant therapy to prolong dormancy in patients with breast cancer at risk for metastatic progression. The recent breakthrough in stimulating the anti-tumour immune response with CTLA4 and PD1/PDL1 inhibitors may turn out to be a strategy to control metastatic dormancy.

Conclusions and outlook

Over the past decade, we have gained significant knowledge on the role of the tumour microenvironment and the host response in promoting tumour progression and metastasis. Many cellular and molecular elements of the involved mechanisms have been unravelled and therapeutic targets identified. Anti-angiogenic and immunostimulatory therapies are now used in the clinic. There are encouraging prospects that novel screening procedures based on the host response to the tumour may be developed to detect cancers at their earliest stages. Several potential therapeutic targets of the metastatic niche have been identified, and their modulation may open new prospects for controlling metastatic outgrowth. Prolonging dormancy by modulating the immune/inflammatory response is emerging as a novel strategy to delay or prevent cancer relapse. Although more research is needed before effective therapies may be developed based on these observations, the road has been taken and the roles of the microenvironment in cancer progression and therapy are here to stay!

Curzio Rüegg, MD
Curzio Rüegg, who was born in Bellinzona, has been chair of pathology at the University of Fribourg since 2010. His current research activities focus on the tumour microenvironment, angiogenesis, metastasis and mechanisms of evasive resistance to anti-cancer treatments.
Tel. +41 (0)26 300 87 66
curzio.ruegg@unifr.ch
www.unifr.ch/pathology

References

1. Nichita C, Ciarloni L, Monnier-Benoit S, Hosseinian S, Dorta G, Rüegg C. A novel gene expression signature in peripheral blood mononuclear cells for early detection of colorectal cancer. *Aliment Pharmacol Ther.* 2014;39:507–517.
2. Ciarloni L, Hosseinian S, Monnier-Benoit S, Imaizumi N, Dorta G, Rüegg C, DGNP-COL-0310 Study Group. Discovery of a 29-gene panel in peripheral blood mononuclear cells for the detection of colorectal cancer and adenomas using high throughput real-time PCR. *PLoS One.* 2015;10:e0123904.
3. Lorusso G, Rüegg C. New insights into the mechanisms of organ-specific breast cancer metastasis. *Semin Cancer Biol.* 2012;22:226–233.
4. Knuchel S, Anderle P, Werffeli P, Diamantis E, Rüegg C. Fibroblast surface-associated FGF-2 promotes contact-dependent colorectal cancer cell migration and invasion through FGFR-SRC signaling and integrin αvβ5-mediated adhesion. *Oncotarget.* 2015;6:14300–14317.
5. Kaplan RN, Riba RD, Zacharoulis S, et al. VEGFR1-positive haematopoietic bone marrow progenitors initiate the pre-metastatic niche. *Nature.* 2005;438:820–827.
6. Malanchi I, Santamaria-Martínez A, Susanto E, Peng H, Lehr HA, Delaloye JF, Huelsken J. Interactions between cancer stem cells and their niche govern metastatic colonization. *Nature.* 2011;481:85–89.
7. Kuonen F, Laurent J, Secondini C, et al. Inhibition of the Kit ligand/c-Kit axis attenuates metastasis in a mouse model mimicking local breast cancer relapse after radiotherapy. *Clin Cancer Res.* 2012;18:4365–4374.

Results of some completed research projects 2014

Project
Dissecting translation reveals therapeutic prospects for malignant gliomas
Friedrich Miescher Institut für biomedizinische Forschung, Basel
CHF 278 700.– | Duration: 1. 3. 2011 – 28. 2. 2014 | KFS 2714-08-2010

Project coordinator
Brian A. Hemmings, PhD | brian.hemmings@fmi.ch

Thwarting cancer cells' ability to evade attack

To be able to grow fast, brain cell tumours have to keep up intensive protein production. But in clinical studies, substances that inhibit the signalling pathway and thus throttle the manufacturing of proteins have shown disappointing results. This is because cells compensate for the loss by means of another signalling pathway. This pathway, too, has to be turned off, as Brian Hemmings and his team at the Friedrich Miescher Institute for Biomedical Research in Basel show in their research projects sponsored by the Swiss Cancer Research foundation.

Brain tumours or gliomas represent only approximately 2 % of all cancers. Still, about 600 people in Switzerland will be diagnosed with a brain tumour each year. The most common and most aggressive type, glioblastomas, leads to death within two years in two-thirds of cases. The quickly reproducing cells of a glioblastoma depend on an intensive metabolism. As is known from previous studies, the mTORC1 complex plays an important role in this connection: It releases the brakes in protein production that are built into healthy cells.

Animal studies with substances that inhibit this complex fostered the hope that medicine would gain a new weapon to combat glioblastomas. But in subsequent clinical studies this hope was dashed. Apparently, the tumour cells are able to compensate for the loss of the mTORC1 complex. What is more, the same substances that inhibit the mTORC1 complex at the same time activate another signalling pathway that ultimately releases the brakes in the cells, as Brian Hemmings and his team at the Friedrich Miescher Institute in Basel have now shown.

How can we break through this frustrating zero-sum game? In seeking an answer, Hemmings and his team of researchers tested a combination of substances. They were in fact able to limit the proliferation of cancer cells when they simultaneously treated cell cultures in the laboratory with both the inhibitor of the mTORC1 complex and a substance aimed against the other signalling pathway. In animal testing this twofold attack prevented the growth of brain tumours. With this the researchers not only threw light on the complex cellular regulation loops but have also discovered a possible new therapy option that, according to Hemmings, now needs to be studied further.

Reference

Grzmil M, Huber RM, Hess D, et al.
MNK1 pathway activity maintains protein synthesis in rapalog-treated gliomas. *J Clin Invest.* 2014;124:742–754.

Project
Role of TIP5 in epigenetic silencing process in cancer
Institut für Veterinärbiochemie und Molekularbiologie, Universität Zürich, Zürich
CHF 201495.– | Duration: 1.11.2011 – 31.10.2014 | KFS 2732-02-2011

Project coordinator
Raffaella Santoro, PhD | raffaella.santoro@vetbio.uzh.ch

Differences between benign and malignant forms of prostate cancer

If prostate cancer is found early, it can be treated successfully in three out of four cases. But in one-fourth of the patients, the cancer has spread (metastasis) after several years. Thanks to the support of the Swiss Cancer Research foundation, Raffaella Santoro's research group has identified a feature that is found only in aggressive forms of prostate cancer.

Each year there are approximately 6000 new cases of prostate cancer in Switzerland. It is one of the most common cancers among men aged 50 and older. Whereas benign prostate tumours grow slowly and with hardly any symptoms, malignant forms grow more quickly and can also metastasize to neighbouring lymph nodes or organs.

In contrast to many other types of cancer, in which a large number of genetic defects are associated with increasing aggressiveness, prostate cancer is characterized by only very few genetic mutations. This makes it impossible for physicians to use genetic analyses to correctly determine which patients can be expected to show favourable outcomes and which patients have a potential for recurrence and metastasis of the tumour – and for whom intensive and radical treatment is more appropriate.

But Raffaella Santoro's research group at the Institute of Veterinary Biochemistry and Molecular Biology at the University of Zurich has now discovered a new feature specific to malignant forms of prostate cancer, as the researchers reported in a recent article in *Nature Genetics*. This new feature is an epigenetic alteration: It is not a change in the nucleotide sequence of the genetic information but rather an alteration that affects gene activity. In tissue samples from metastatic prostate tumours, Santoro and her laboratory found higher levels of a protein called TIP5. In healthy cells, TIP5 regulates the exactly correct number of ribosomes. Ribosomes are complex molecular machines that are the protein builders of the cell.

Whereas more TIP5 in healthy cells results in fewer ribosomes – and thus generally fewer proteins and slower growth, this balance is shifted in the cancer cells. Here, it is the opposite: The more TIP5 in the cells, the more quickly they grow and the more aggressively they spread. In a follow-up project in the next few years the Santoro group will be studying whether the TIP5 protein plays a role in the development of cancer stem cells. Cancer stem cells have a great self-renewal potential and are of increasing importance in cancer research, for they are often found to be responsible for the recurrence of tumours, metastasis, and treatment failure.

Reference

Gu L, Frommel SC, Oakes CC, et al. BAZ2A (TIP5) is involved in epigenetic alterations in prostate cancer and its overexpression predicts disease recurrence. *Nat Genet.* 2015;47:22–30.

List of approved research projects in 2014

More information about the funded projects can be found on www.krebsliga.ch/researchprojects

Total funds allocated: CHF 8 677 400.–

Alimonti Andrea | Targeting the tumour immune system for pro-senescence therapy for cancer
Istituto Oncologico di Ricerca (IOR), Istituto Oncologico della Svizzera Italiana (IOSI), Bellinzona
CHF 299 400.– | Duration: 1.1.2015 – 31.12.2017 | KFS 3505-08-2014

Bernasconi Michele | Improving treatment of paediatric sarcomas through targeted nanoparticle drug delivery
Experimentelle Infektiologie und Krebsforschung, Kinderspital Zürich, Zürich
CHF 199 400.– | completely financed by a foundation | Duration: 1.6.2014 – 30.11.2016 | KFS 3378-02-2014

Bourquin Jean-Pierre | Modelling and targeting critical oncogenic determinants driven by the TCF3-HLF translocation in high risk ALL
Experimentelle Infektiologie und Krebsforschung, Kinderspital Zürich, Zürich
CHF 369 400.– | Duration: 1.1.2015 – 31.12.2017 | KFS 3526-08-2014

Boyman Onur | Use of interleukin-2-antibody complexes to stimulate natural killer cells for immunotherapy of malignant haematological disorders
Klinik für Immunologie, Universitätsspital Zürich, Zürich
CHF 247 500.– | Duration: 1.8.2014 – 31.7.2016 | KFS 3375-02-2014

Christofori Gerhard | EMT – an escape mechanism of cancer (stem) cells from therapy?
Departement Biomedizin, Universität Basel, Basel
CHF 348 000.– | Duration: 1.3.2015 – 28.2.2018 | KFS 3479-08-2014

De Palma Michele | Anti-angiogenic therapy for breast cancer: role of macrophages and microRNAs as effectors and biomarkers of tumour responses
Institut suisse de recherche expérimentale sur le cancer (ISREC), EPF de Lausanne, Lausanne
CHF 116 500.– | Duration: 1.1.2015 – 31.12.2015 | KFS 3007-08-2012

Gönczy Pierre | Deciphering mechanisms preventing centrosome amplification in human cells
Institut suisse de recherche expérimentale sur le cancer (ISREC), EPF de Lausanne, Lausanne
CHF 366 200.– | Duration: 1.2.2015 – 31.1.2018 | KFS 3388-02-2014

Greter Melanie | Determining the influence of cytokine signalling on myeloid cell-mediated tumour control
Institut für Experimentelle Immunologie, Universität Zürich, Zürich
CHF 241 000.– | completely financed by a foundation | Duration: 1.9.2014 – 31.8.2017 | KFS 3382-02-2014

Johansen Pål | Preclinical development of cancer vaccines using photosensitization as adjuvant for stimulation of cytotoxic CD8 T-cells
Dermatologische Klinik, Universitätsspital Zürich, Zürich
CHF 250 000.– | Duration: 1.11.2014 – 31.10.2016 | KFS 3451-08-2014

Katanaev Vladimir | Antagonists of FZD7 as anti-triple negative breast cancer agents
Département de pharmacologie et de toxicologie, Université de Lausanne, Lausanne
CHF 116 700.– | Duration: 1.2.2015 – 31.1.2016 | KFS 2978-08-2012

Krek Wilhelm | Hypoxia-driven Sf3b1-dependent splicing in pancreatic cancer growth
Institut für Molekulare Gesundheitswissenschaften, ETH Zürich, Zürich
CHF 121 900.– | Duration: 1.7.2014 – 30.6.2015 | KFS 3411-02-2014

Martinou Jean-Claude | Investigation of the mechanisms that regulate the activity of the mitochondrial pyruvate carrier in tumour cells
Département de biologie cellulaire, Université de Genève, Genève
CHF 217 950.– | Duration: 1.8.2014 – 31.7.2016 | KFS 3366-02-2014

Matthias Patrick | Histone deacetylase 11 is a potential new target for breast cancer therapy
Friedrich Miescher Institut für biomedizinische Forschung (FMI), Basel
CHF 214 900.– | Duration: 1. 4. 2015 – 31. 3. 2017 | KFS 3471-08-2014

Mosimann Christian | Molecular mechanisms of chordoma formation and treatment
Insitut für Molekulare Biologie, Universität Zürich, Zürich
CHF 375 000.– | Duration: 1. 7. 2014 – 30. 6. 2017 | KFS 3377-02-2014

Peter Matthias | Roles of the $CRL4^{DCAF6}$ E3 ubiquitin ligase in genome stability and cancer development
Institut für Biochemie, ETH Zürich, Zürich
CHF 250 000.– | Duration: 1. 2. 2015 – 31. 1. 2017 | KFS 3498-08-2014

Petrova Tatiana | Role of endothelial calcineurin signalling in tumour progression
Département de Biochimie, Université de Lausanne, Lausanne
CHF 237 900.– | Duration: 1. 6. 2014 – 31. 5. 2016 | KLS 3406-02-2014

Radtke Freddy | Determination of intestinal tumourigenesis by TSLP-mediated inflammation
Institut suisse de recherche expérimentale sur le cancer (ISREC), EPF de Lausanne, Lausanne
CHF 361 450.– | Duration: 1. 4. 2015 – 31. 3. 2018 | KFS 3454-08-2014

Roth Patrick | Integration of classical cancer therapy into novel concepts of immunotherapy for glioblastoma
Klinik für Neurologie, Universitätsspital Zürich, Zürich
CHF 241 000.– | completely financed by a foundation | Duration: 1. 2. 2015 – 31. 1. 2018 | KFS 3478-08-2014

Rüegg Curzio | Unravelling cellular and molecular mechanisms of breast cancer metastasis to the brain
Département de médecine, Université de Fribourg, Fribourg
CHF 329 400.– | Duration: 1. 10. 2015 – 30. 9. 2018 | KFS 3513-08-2014

Ruiz i Altaba Ariel | Macrocyclic lactones as Wnt-TCF blockers in cancer
Département de médecine génétique et développement, Université de Genève, Genève
CHF 253 350.– | Duration: 1. 8. 2014 – 31. 7. 2017 | KLS 3335-02-2014

Santoro Raffaella | Role of TIP5 in aggressive prostate cancer
Institut für Veterinärbiochemie und Molekularbiologie, Universität Zürich, Zürich
CHF 323 050.– | Duration: 1. 2. 2015 – 31. 1. 2018 | KFS 3497-08-2014

Schoonjans Kristina | Exploration of the LRH-1-ASNS axis in liver tumourigenesis
Institut interfacultaire de bioingénierie, EPF de Lausanne, Lausanne
CHF 242 450.– | Duration: 1. 2. 2015 – 31. 1. 2018 | KFS 3444-08-2014

Schwaller Jürg | Modelling and targeting of aggressive human acute leukaemia driven by epigenetic regulators
Departement Biomedizin, Universitätsspital Basel, Basel
CHF 366 600.– | Duration: 1. 1. 2015 – 31. 12. 2017 | KFS 3487-08-2014

Stamenkovic Ivan | Analysis of the molecular mechanisms underlying the pathogenesis of Ewing family tumours
Institut universitaire de pathologie de Lausanne, Centre hospitalier universitaire vaudois (CHUV), Lausanne
CHF 355 950.– | Duration: 1. 2. 2015 – 31. 1. 2018 | KLS 3365-02-2014

Stein Jens | Intravital imaging of the T-cell-mediated adaptive immune response against tumours
Theodor-Kocher-Institut, Universität Bern, Bern
CHF 339 600.– | Duration: 1. 2. 2015 – 31. 1. 2018 | KFS 3524-08-2014

Stocker Hugo | Exploring the differential behaviour of cells lacking the tumour suppressors PTEN and TSC1/2
Institut für Molekulare Systembiologie, ETH Zürich, Zürich
CHF 239 400.– | completely financed by a foundation | Duration: 1. 2. 2015 – 31. 7. 2018 | KLS 3407-02-2014

Tamaskovic Rastislav | Targeting and systemic analysis of ErbB oncogenic network in human cancers
Biochemisches Institut, Universität Zürich, Zürich
CHF 240 200.– | Duration: 1. 7. 2014 – 30. 6. 2016 | KFS 3419-02-2014

Tschan Mario P. | DAPK2 – a versatile kinase at the crossroad of differentiation, apoptosis and autophagy in AML?
Institut für Pathologie, Universität Bern, Bern
CHF 369 700.– | partially financed by a foundation | Duration: 1. 8. 2014 – 31. 7. 2017 | KFS 3409-02-2014

Werner Sabine | Functional characterization of fibroblasts in epithelial skin cancers and pre-malignant lesions and their modulation by the growth and differentiation factor activin
Institut für Molekulare Gesundheitswissenschaften, ETH Zürich, Zürich
CHF 353 450.– | Duration: 1. 4. 2015 – 31. 3. 2018 | KFS 3474-08-2014

Wong Wendy W. | The role of RIPK3 in tumour formation and metastasis
Institut für Experimentelle Immunologie, Universität Zürich, Zürich
CHF 335 300.– | Duration: 1. 7. 2014 – 30. 6. 2017 | KFS 3386-02-2014

Zavolan Mihaela | Characterization of the Ewing's sarcoma protein's involvement in the maintenance of genomic stability
Departement Biozentrum, Universität Basel, Basel
CHF 354 750.– | Duration: 1. 3. 2015 – 28. 2. 2018 | KFS 3508-08-2014

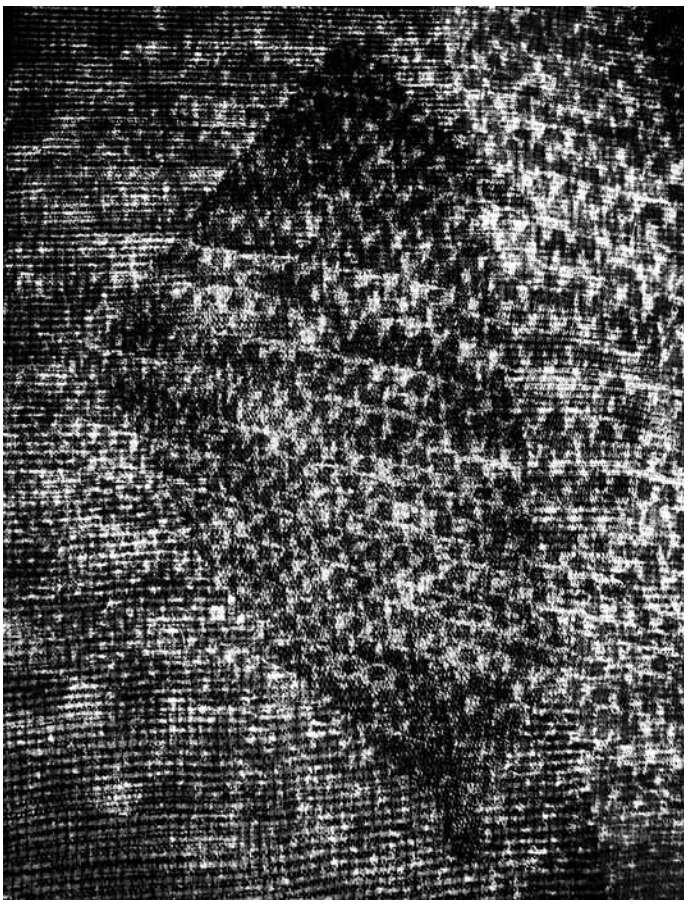
Approved bursaries in 2014

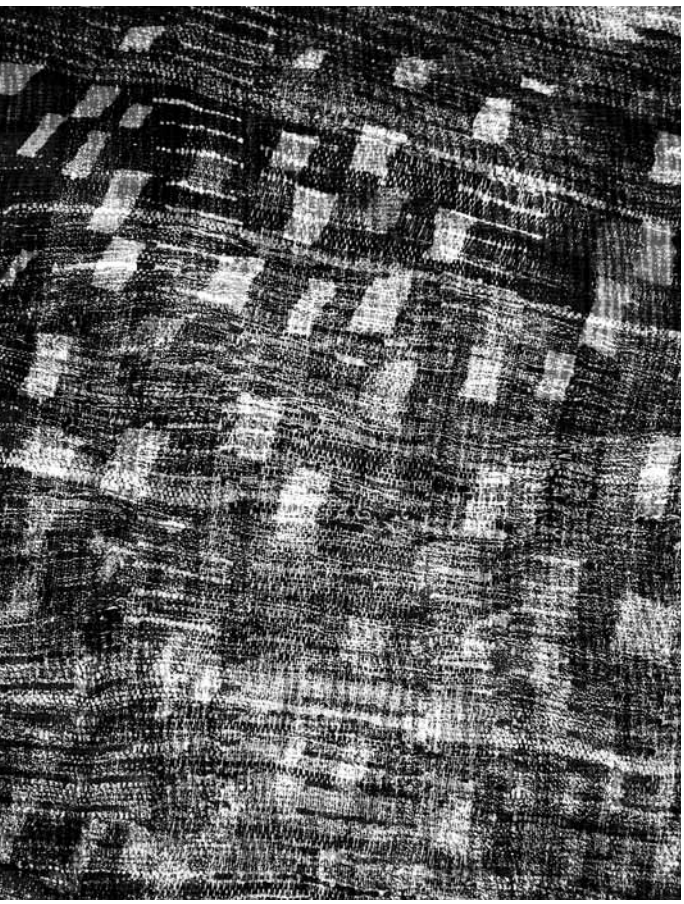
Total funds allocated: CHF 455 000.–

Blatter Sohvi | Targeting drug tolerance of residual Brca1-mutated mouse mammary tumours
Destination: Institut für Tierpathologie, Universität Bern, Bern
CHF 180 000.– | Duration: 1. 9. 2014 – 31. 8. 2017 | MD PhD 3446-01-2014

Chevalier Nadja | Role of TAT-RasGAP$^{317-326}$ peptide in drug-induced apoptosis of childhood tumour cells
Destination: Département de physiologie, Université de Lausanne, Lausanne
CHF 155 000.– | Duration: 1. 9. 2014 – 1. 4. 2017 | MD PhD 3445-01-2014

Guri Yakir | Role of mTOR signalling in liver cancer development
Destination: Departement Biozentrum, Universität Basel, Basel
CHF 120 000.– | Duration: 1. 9. 2014 – 31. 8. 2016 | MD PhD 3447-01-2014





The EORTC*: A key player in cancer clinical and translational research in Europe

Great progress has been made in understanding tumour biology and genetics, and we are just beginning to translate the wealth of information, identify new treatment targets, and customize cancer therapy based on the patients' and tumours' individual profiles. We recognize that cancer is not an organ-specific disease but is driven by various molecular pathways, whose relevance and function may differ in various contexts. Novel agents targeting one or several key molecular pathways are available. More than ever, cancer care requires highly specialized expertise, interdisciplinarity, multimodal treatment strategies, technical skills, and profound biological understanding.

Challenges in applied cancer research

The tremendous wealth of available data is often misunderstood as information or knowledge. Eric Schmidt, the CEO of Google, stated in 2010 that "we create as much data in two days now than from the dawn of man through 2003". It is estimated that a physician would need about 160 hours of reading every week to keep up with the literature. Thus, only through collaboration and interaction can we hope to increase our knowledge and make rational decisions. Only collaboration and data sharing rather than fierce competition will lead to true advances. We need new ways to recognize and compensate collaborative research, and academic institutions will need to review their promotion system. Impact rather than impact factor is important.

Roger Stupp, MD
President EORTC and Director, Department of Oncology, University Hospital Zurich

Denis Lacombe, MD
Director General, EORTC Headquarters, Brussels

* The European Organisation for Research and Treatment of Cancer

The administrative burden and cost of conducting clinical trials have become prohibitive. Data protection, fear of fraud, presumed conflict of interest, and avoidance of any risk is overarching the research arena. Outside clinical trials, hardly any formalized quality assurance and no evaluation of outcome is required, but clinical trialists voluntarily submit to external oversight and quality assurance and engage in long discussions before a treatment protocol is written. Still, rather than recognizing the importance and value of research to daily practice, investigators' misconduct is implicitly assumed and layers of partly redundant approvals are imposed. Excessive detail in patient information has replaced succinct and relevant guidance required for an educated choice. A recent survey reported an average length of oncology patient information sheets and informed consent forms of 20 pages. How can we expect a lay person to understand all of these details, where side effects of a study drug are listed next to the risk of bruises from a venous puncture in the same document?

Collaborative molecular screening platforms

Inclusion of patients with similar or specific molecular alterations requires efficient screening. But rather than screening individual markers occurring at a frequency of often less than 10%, analysing a whole profile will be much more efficient and effective. In the current model, tumours are often screened for a single alteration (which will be absent in the majority of patients), while other targets may be druggable (and thus offer a potentially effective treatment) now or later or at another medical centre. The thinking in silos of both academia and industry needs to be overcome; regulations and laws should be adapted to facilitate exchange of data and knowledge in the vital interest of the patient. Within EORTC, we have developed Screening Patients for Efficient Clinical Trial Access (SPECTA), a screening programme that allows identification of patients with various rare molecular alterations and provides easy access to specific clinical trials evaluating novel compounds targeting the presumed key pathway. The independence of the EORTC SPECTA platform allows for collaboration among various stakeholders, including the pharmaceutical and technology industry and numerous academic centres. Access to patients, testing in real-life situations, but also monitoring of the outcome and results longitudinally are characteristic of academic research. It will also allow for retrospective evaluations of emerging new technologies for better outcome prediction and patient selection.

International collaboration

Molecular classification is now an integral part of modern pathological tumour characterization. What were once frequent tumours have become rare disease entities, as nicely illustrated by adenocarcinoma of the lung. While previously 80 % of lung cancers were grouped as non-small cell lung cancer and treated uniformly (albeit not very successfully) with chemotherapy, adenocarcinoma of the lung is now currently subdivided into at least eight molecular subtypes with distinct targets; both the number of subtypes and potential treatment targets is increasing almost daily. Only international collaboration can provide the required patient numbers to adequately and efficiently test new compounds and targets.

Targeted treatments, or precision medicine, will dramatically increase the success rate of novel therapies with expected response rates of 60 % to 80 % rather than the current 20 % to 30 % and prolongation of survival measured in years rather than the usual two to four months. However, the methodology of clinical research needs to be revisited, because it is not possible to test every single compound in a prospective randomized trial for every rare subtype. Observational longitudinal studies, evaluation of quality of life, health resource utilization, and comparison within well-characterized historical databases will gain importance. Organizations like the EORTC with a 50-year long history, a long-term memory and expertise, and an updated database including long-term outcome have the ability to pool the data for secondary analyses. Industry-sponsored trials typically end when the primary endpoint has been reached, whereas we follow our patients throughout the course of their disease and record subsequent treatments and overall outcome.

Academic cancer research and industry collaboration

Commercial sponsors conducted over 60 % of all clinical trials from 2005 to 2013; 83 % of all phase I trials and 67 % of the phase III trials, whereas non-commercial (academic) sponsors largely conducted 47 % of the total number of phase II trials and 78 % of the total number of phase IV trials. Thus, academia came to the table when the drug was already on the market or in advanced stage development. Of note, academic sponsors conducted only 9 % of the international trials, 826 of the 8713 total international clinical trials from 2005 to 2013; the EORTC alone accounted for 72 of these trials, which illustrates the important role of EORTC in the international trial landscape.

Although the immediate research objectives of commercial and non-commercial sponsors may differ somewhat, the ultimate goal of improving cancer care is the same. We trust that earlier involvement of the academic community in applied research, i. e. clinical and translational research, would make it possible to increase efficiency of drug development, save resources, money, and lives, and avoid late stage development of some compounds that will ultimately fail. The presence of the target, evaluation of its relevance in the context of a specific tumour type, identification of alternative redundant pathways and escape mechanisms, and the pharmacology and distribution of the drug in the tumour tissue (and not only in the blood) are important questions that are often not sufficiently evaluated in early clin-

ical trials. Minimal additional funding and investment during early clinical research including sophisticated imaging, molecular analyses, repeat biopsies analysing changes in target expression or escape mechanisms is needed.

The EORTC provides a cutting-edge clinical research infrastructure, including the capacity of remote central pathology review, biobanking, central storage and analysis of medical imaging, and a fully compliant modern electronic database system with remote data capture ability. The EORTC family is a powerful multidisciplinary network of experienced translational and clinical investigators and expertise for an advanced methodological research agenda. We have established active partnerships with key learned societies and research organizations to foster a maximum of expertise and synergy in the interest of our patients. Collaboration with cancer registries makes it possible to address societal questions in cancer care and to assess the value of cancer treatment rather than simply its cost or price.

Quality of life, long-term follow-up, and survivorship

There is more to cancer care than simply survival endpoints. Although overall survival remains the gold standard as a primary endpoint in many trials, this is due to the fact that the measurement is solid and not that survival is what matters most. The EORTC was a pioneer in establishing quality of life assessment as part of the trial methodology, and the EORTC quality of life questionnaire and tumour-specific modules are now used worldwide in numerous clinical trials.

An increasing number of patients are being cured. In particular, multimodal therapy and interdisciplinary disease management have led to substantial progress in diseases like lymphoma, sarcoma, and breast, head and neck, lung, oesophageal, and cervix cancer. EORTC has contributed in all these areas to the current state of the art and standard of care. With more patients being cured, we are facing the consequences of success. Under the title “survivorship” we address specific problems of cancer survivors. Late toxicity (e. g. chronic asthenia/fatigue, neuropathy, heart failure), secondary malignancies (that are captured thanks to long-term follow-up for 20 years and more in cooperative group databases), and fertility problems are among the medical consequences of cancer care. Furthermore, cancer survivors may face social and societal discrimination at the workplace and unemployment, inability to obtain adequate insurance coverage, and refusal of loans for a new home, to name a few problems. These issues were discussed at the EORTC-initiated first international Survivorship Summit in January 2013 (the second summit is scheduled for 31 March – 1 April 2016 in Brussels).

The EORTC: The future of cancer therapy

The European Organisation for Research and Treatment of Cancer (EORTC) was founded in 1962 by a group of visionary European physician-researchers and pioneer oncologists. Today, the EORTC is composed of researchers and physicians at over 200 academic institutions who contribute their expertise, infrastructure, and local collaborators for the benefit of the patient. The mission of the EORTC is to develop and conduct clinical and translational cancer research. The EORTC strives to improve management and care of cancer patients by increasing survival and quality of life through research and a better understanding of cancer. It is the only pan-European cancer clinical research infrastructure active across multiple tumour types and with collaborations in most European countries.

The EORTC headquarters are located in Brussels. Led by Denis Lacombe, director general, over 170 dedicated staff members of the headquarters provide the required statistical and regulatory expertise and manpower for information technology, data management, and study oversight in order to conduct numerous international clinical and translational research trials according to the highest scientific standards and in compliance with all national and international regulations. The informatics platforms are now all fully compatible with the standards requested by regulatory agencies, thus allowing the export of the data for regulatory review and approval. This is of great importance, as novel treatments if effective need to be made available to all patients without undue delay.

The EORTC is a not-for-profit organization according to Belgian law. It is financed through charitable donations and supported by many national cancer leagues (including the Swiss Cancer League and the National Cancer Institute in the United States). Individual trials are funded on a per project basis. The EORTC board of directors is composed of 18 renowned experts in cancer care and is currently chaired by Roger Stupp.

The EORTC conducts:
– Large phase III academic clinical trials aimed at changing the standard of care
– Clinical trials with a strong and methodologically sound translational research component
– Clinical trials addressing rare tumour types
– Clinical trials optimizing integration of new agents in therapeutic strategies
– Quality of life research, aiming to fully integrate patient-reported outcomes in EORTC clinical trials
– Retrospective research projects exploiting the wealth of data accumulated over the past decades
– Prospective research projects in real life and survivorship issues
– Prospective research on public health issues, projects in partnership with population-based registries

The EORTC strategy and mode of conduct

The EORTC strategy includes a number of key areas, such as complex studies aimed at documenting the biology of the disease and the mechanisms of action of the tested treatments. It extends to a multidisciplinary palette including pathology, molecular biology, quality assurance programmes, validating biomarkers, and demonstrating their clinical utility. Its both vertical and transversal structure allows for research across various tumour types and facilitates biomarker-driven investigations. Drug development in combination with radiotherapy builds on the EORTC's unique and well-developed pan-European radiotherapy quality assurance platform. The academic agenda and independent funding also makes it possible to address areas of unmet need and optimization of treatment including treatment de-escalation. For specific needs of patients with brain or bone metastases, interdisciplinary and transversal platforms have been created.

Every EORTC trial proposal is evaluated early on by the Board of Directors on the pertinence of the research question, scientific soundness, and feasibility. Protocols subsequently undergo independent external peer review. The EORTC trials follow strict principles of academic integrity. The clinical trial dataset is held and maintained by the EORTC not allowing data access other than what is required by the protocol (e. g. surveillance of toxicity, prespecified interim analysis). The statistical analysis of the full clinical trial dataset is performed by the EORTC statistical team. Despite these rules, open door policies do apply. Industry partners may run a simultaneous analysis at trial completion, e. g. with the objective of subsequent regulatory submission. The EORTC Independent Data Monitoring Committee has the capacity for trial oversight, while the trial steering committees ensure the day-to-day process of trials through the representation of both EORTC principal investigators and members of the headquarters. Human biological materials collected as part of a clinical trial are managed by a separate steering committee. The EORTC prepares publications of the results and assures complete disclosure of all its clinical trials.

Prof. Roger Stupp, MD

Roger Stupp completed medical school at the University of Zurich in 1987 and subsequently specialized in internal medicine and haematology/oncology in Switzerland and at the University of Chicago Pritzker School of Medicine. From 1996 to 2013 he was an attending physician and later associate professor at the multidisciplinary oncology centre of the University Hospital of Lausanne (CHUV). Since August 2013 he has been a full professor at the University of Zurich and chairman of the Department of Oncology and Cancer Centre at University Hospital Zurich. For over 20 years he has been an active member and investigator at the EORTC, where he has served as an officer in various functions, has been a member of the Board since 2006, and president since 2012.

Tel. +41 (0)44 255 97 79
roger.stupp@usz.ch
www.med.uzh.ch/UeberdieFakultaet/fakultaetsmitglieder/stupproger.html

Denis Lacombe, MD

Denis Lacombe completed an MD at the University of Marseilles (France) in 1988 and conducted research in pharmacology and pharmacokinetics from 1989 to 1991 at Roswell Park Cancer Institute (Buffalo, NY). From 1991 to 1993, he worked as a clinical research advisor in charge of the development of a new drug in oncology in the pharmaceutical industry. He joined the EORTC in 1993 as a research fellow, became Director EORTC Headquarters in 2010 and was appointed EORTC Director General in April 2015.

Tel. +32 (0)2 774 16 35
denis.lacombe@eortc.be
www.eortc.org/about-us/management-structure/eortc-headquarters/director-headquarters/

References

Lacombe D, Tejpar S, Salgado R, Cardoso F, Golfinopoulos V, Aust D, Folprecht G, Roth A, Stupp R. European perspective for effective cancer drug development. *Nat Rev Clin Oncol.* 2014;11:492–498.

Liu Y, Lacombe D, Stupp R. The changing world of drug development: an academic research organisation's perspective on the "Seven Wonders" of the future world of anticancer drug development. *Chin Clin Oncol.* 2014;3:19.

Lacombe D, Burock S, Bogaerts J, Schoeffski P, Golfinopoulos V, Stupp R. The dream and reality of histology agnostic cancer clinical trials. *Mol Oncol.* 2014;8:1057–1063.

Burock S, Meunier F, Lacombe D. How can innovative forms of clinical research contribute to deliver affordable cancer care in an evolving health care environment? *Eur J Cancer.* 2013;49:2777–2783.

Lacombe D, Burock S, Meunier F. Academia-industry partnerships: are we ready for new models of partnership? The point of view of the EORTC, an academic clinical cancer research organisation. *Eur J Cancer.* 2013;49:1–7.

Results of some completed research projects 2014

Project
Targeting the EGFR/PI3K pathway in glioblastoma
Clinical Neurosciences, Centre hospitalier universitaire vaudois (CHUV), Lausanne
CHF 198 300.– | Duration: 1. 2. 2011 – 31. 1. 2015 | KFS 2670-08-2010

Project coordinator
Prof. Monika E. Hegi, PhD | monika.hegi@chuv.ch

When signalling pathways prove to be robust

The cells of every second glioblastoma have more growth factor receptors on their surface than normal cells do. But then why do substances that inhibit these receptors show no efficacy? In a research project supported by the Swiss Cancer Research foundation, Monika Hegi and her team at Lausanne University Hospital (CHUV) have discovered that the tumour can switch to similar receptors.

Glioblastomas are rare brain tumours. They are one of the most deadly cancers: Only one-half of patients with glioblastomas are still alive after 15 months, and unfortunately, also modern targeted therapies have not been able to change this. Especially high hopes were raised by the finding that in about half of glioblastoma cases, a certain growth factor receptor – the epidermal growth factor receptor (EGFR) – is overexpressed on the surface of the glioblastoma cells. "This receptor must be very important for the tumour", explains Monika Hegi at CHUV.

However, clinical studies with substances that inhibit the growth factor receptor showed disappointing efficacy. The glioblastomas continued to grow, even though the substance reached the tumour and even deactivated the EGFR, as Hegi and her colleagues discovered in glioblastoma tissue of patients. The deactivated receptor is indeed no longer able to stimulate growth of the cells. However, similar molecules apparently take over the function of the inhibited receptor. "This is an extremely robust signalling pathway. The tumour has more alternatives than we originally assumed", says Hegi.

In her just recently completed research project, Hegi and her team looked for new possible targets of attack. Her search is a difficult undertaking: The complexity of the tumour has to be surmounted, and at the same time several signalling pathways have to be turned off – without allowing toxic effects to become too great. Through studies with cell cultures and complex biostatistical evaluation methods the researchers try to rationally reduce the many thousands of possible combinations and point the way for future clinical studies.

"We aren't there yet; our indications are not yet strong enough", Hegi says. But she is not planning to give up, for "the EGFR is one of the few targets that we have." It is frustrating that there has been no breakthrough yet, but this makes her all the more determined to find the help that patients so urgently need.

References

Hegi ME, Rajakannu P and Weller M.
Epidermal growth factor receptor: a re-emerging target in glioblastoma. *Curr Opin Neurol.* 2012;25:774–779.

Hegi ME. Molecular insights into brain tumors – ready for translation into novel treatment strategies? *Curr Opin Neurol.* 2013;26:678–680.

Project
IBCSG 40-11/NCIC CTG MA.32: A Phase III Randomized Trial of the Effect of Metformin versus Placebo on Recurrence and Survival in Early Stage Breast Cancer
Division of Medical Oncology, Luzerner Kantonsspital, Luzern
CHF 260 300.– | Duration: 1. 9. 2010 – 31. 8. 2014 | KFS 2689-08-2010

Project coordinator
Prof. Stefan Aebi, MD | stefan.aebi@onkologie.ch

Prolonging survival of patients with breast cancer?

Can a drug used for treating diabetes also protect patients with breast cancer from recurrence? An international clinical trial with over 3500 patients worldwide is seeking to find the answer. The study is being conducted at the initiative of the National Cancer Institute of Canada Clinical Trials Group and without funding from the pharmaceutical industry. Thanks to support from the Swiss Cancer Research foundation, hospitals in Switzerland are also participating in this large project.

At first glance, diabetes and breast cancer may appear to have very little in common. But the idea of using a tried and tested drug for treating diabetes also in the fight against breast cancer is based on three different observations. First, epidemiologists noticed that women with diabetes treated with metformin have lower breast cancer rates than healthy women of the same age. Second, among women with diabetes who are diagnosed with breast cancer despite their lower risk, women who took metformin to help control the amount of sugar in the blood responded better to cancer treatment. And third, metformin was found to reduce the growth of cancer cells in cell cultures and – in combination with cancer drugs – also in animal testing.

Metformin is a relatively inexpensive and readily available drug, and its side effects are well-known and also easily managed. For this reason, the Canadian cancer trial group undertook to test the substance in a placebo-controlled, double blind trial. In the trial, patients take a pill mornings and evenings for five years after completion of their cancer treatments. Neither the patients nor the physicians treating them know whether their pills contain metformin or not.

Together with colleagues in Canada, the United States and Great Britain, the physicians have included more than 3500 patients in their clinical trial since 2010. Hospitals in Switzerland are also participating – thanks to the commitment of the International Breast Cancer Study Group (IBCSG) in Bern to this large academic and industry-independent study. With the support provided by the Swiss Cancer Research foundation, the IBCSG submitted the project for approval to Swissmedic and organized the shipping of the trial medication and the blood and tissue samples.

In total the Swiss hospitals enrolled 50 patients in the trial. No new patients will be included, as the number of patients needed for the statistical evaluation was reached more than a year ago. But the treatment continues, and initial results are expected in one to two years at the earliest. The findings will show whether thanks to metformin perhaps even 88 (instead of 85 as up to now) of 100 women diagnosed with breast cancer will still be alive after five years.

Reference

Goodwin PJ, Parulekar WR, Gelmon KA, et al.
Effect of metformin vs placebo on weight and metabolic factors in NCIC CTG MA.32. *J Natl Cancer Inst.* 2015;107:djv006.

List of approved research projects in 2014

More information about the funded projects can be found on www.krebsliga.ch/researchprojects

Total funds allocated: CHF 4 698 250.–

Ballmer Peter E. | Influence of a specially formulated whey protein supplement on muscle strength in cancer outpatients on a physical exercise and nutrition programme
Klinik für Innere Medizin, Kantonsspital Winterthur, Winterthur
CHF 291 950.– | Duration: 1.7.2015 – 30.6.2018 | KFS 3495-08-2014

Droeser Raoul | Prognostic and functional significance of interleukin-22 in colorectal cancer
Klinik für Allgemeinchirurgie, Universitätsspital Basel, Basel
CHF 316 500.– | Duration: 1.1.2015 – 31.12.2017 | KFS 3528-08-2014

Dufour Jean-François | How physical activity influences carcinogenesis: the case of HCC
Universitätsklinik für Viszerale Chirurgie und Medizin, Inselspital, Bern
CHF 234 750.– | Duration: 1.2.2015 – 31.1.2018 | KFS 3506-08-2014

Krebs Philippe | Role of IL-33/ST2 signalling in myeloproliferative neoplasms
Institut für Pathologie, Universität Bern, Bern
CHF 124 350.– | completely financed by a foundation | Duration: 1.12.2015 – 30.11.2016 | KLS 3408-02-2014

Marra Giancarlo | The epigenome of colorectal transformation: from early tumours to liver metastases
Institut für Molekulare Krebsforschung, Universität Zürich, Zürich
CHF 125 650.– | Duration: 1.8.2014 – 31.7.2015 | KFS 3397-02-2014

Marti Thomas | Characterization and targeting of cancer-initiating cells in lung cancer
Universitätsklinik für Thoraxchirurgie, Inselspital, Bern
CHF 167 450.– | Duration: 1.1.2015 – 31.12.2016 | KFS 3530-08-2014

Moch Holger | Determination of renal cell carcinoma sunitinib responders and non-responders based on microRNA profile
Institut für Klinische Pathologie, Universitätsspital Zürich, Zürich
CHF 323 100.– | Duration: 1.1.2015 – 31.12.2017 | KFS 3490-08-2014

Pagani Olivia | A single-arm, phase II trial evaluating the pregnancy outcomes and safety of interrupting endocrine therapy for young women with endocrine responsive breast cancer who desire pregnancy. Pregnancy Outcome and Safety of Interrupting Therapy for women with endocrine responsiVE breast cancer (POSITIVE)
Carcinoma del seno, Istituto Oncologico della Svizzera Italiana (IOSI), Bellinzona
CHF 264 600.– | Duration: 1.9.2013 – 31.8.2016 | KLS 3361-02-2014

Passweg Jakob | SAKK 33/14: effects of beta-3-sympathicomimetic agonists on the disease course and mutant allele burden in patients with myeloproliferative neoplasms. A multicentre phase II trial
Klinik für Hämatologie, Universitätsspital Basel, Basel
CHF 366 800.– | Duration: 1.5.2015 – 30.4.2018 | KFS 3539-08-2014

Perren Aurel | Autophagy modulation in the treatment of pNETs
Institut für Pathologie, Universität Bern, Bern
CHF 286 900.– | Duration: 1.9.2014 – 31.8.2017 | KFS 3360-02-2014

Peters Solange | Role of RANK signalling in non-small cell lung cancer
Département d'oncologie, Centre hospitalier universitaire vaudois (CHUV), Lausanne
CHF 353 300.– | Duration: 1.2.2015 – 31.1.2018 | KFS 3458-08-2014

Riether Carsten | Targeting CD70 in chronic and acute myeloid leukaemia
Departement Klinische Forschung, Universität Bern, Bern
CHF 356 700.– | partially financed by a foundation | Duration: 1.1.2015 – 31.12.2017 | KLS 3346-02-2014

Schwappach David | "Do four eyes see more than two?": double-checking medication administration to increase patient safety in oncology
Stiftung für Patientensicherheit, Zürich
CHF 268 100.– | Duration: 1. 1. 2015 – 31. 8. 2017 | KFS 3496-08-2014

Speiser Daniel E. | Avidity assessment of human mono- and polyclonal T-cell populations and their correlations with biological and clinical parameters of melanoma patients
Centre Ludwig pour la recherche sur le cancer, Université de Lausanne, Lausanne
CHF 214 000.– | Duration: 1. 4. 2015 – 31. 3. 2018 | KFS 3507-08-2014

Stenner Frank | Establishment of GOLPH2 as a serum marker in hepatocellular carcinoma (within the SAKK 77/08 trial)
Klinik für Onkologie, Universitätsspital Basel, Basel
CHF 97 400.– | Duration: 1. 4. 2014 – 31. 3. 2015 | KLS 3392-02-2014

Truninger Kaspar | DNA methylation in early detection and prevention of colorectal cancer
Gastroenterologie Oberaargau, Langenthal
CHF 365 100.– | Duration: 1. 9. 2014 – 31. 8. 2017 | KFS 3527-08-2014

Varga Zsuzsanna | Proliferative activity and Ki-67 assessment in breast cancer (SAKK 28/12)
Institut für Klinische Pathologie, Universitätsspital Zürich, Zürich
CHF 91 650.– | completely financed by a foundation | Duration: 1. 6. 2015 – 30. 5. 2016 | KLS 3358-02-2014

Wicki Andreas | Multicentre, investigator-initiated single arm phase II trial to evaluate anti-EGFR immunoliposomes in patients with pretreated triple-negative breast cancer
Klinik für Onkologie, Universitätsspital Basel, Basel
CHF 158 950.– | Duration: 1. 1. 2015 – 30. 6. 2017 | KFS 3501-08-2014

Wild Peter J. | Next-generation sequencing and functional genomics: identification of the molecular drivers of endometrial cancer progression
Institut für Klinische Pathologie, Universitätsspital Zürich, Zürich
CHF 291 000.– | Duration: 1. 4. 2014 – 31. 3. 2017 | KLS 3384-02-2014

Approved bursaries in 2014

Total funds allocated: CHF 249 900.–

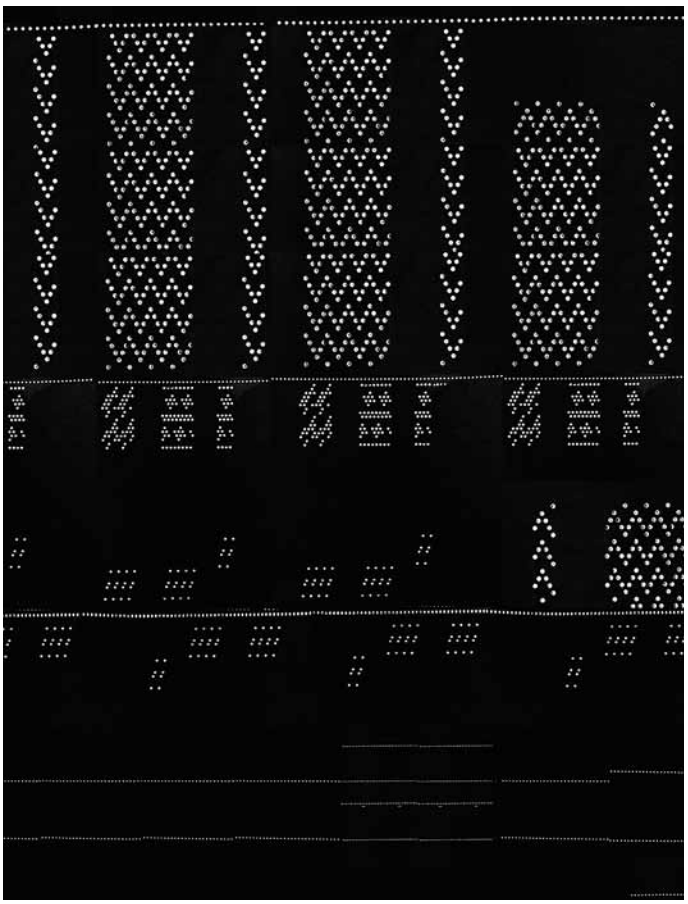
Berger Martin D. | Impact of the angiogenic and immune pathways to predict recurrence in patients with colon cancer stage II and III
Destination: Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, USA
CHF 60 700.– | Duration: 1. 12. 2014 – 30. 11. 2015 | BIL KLS 3334-02-2014

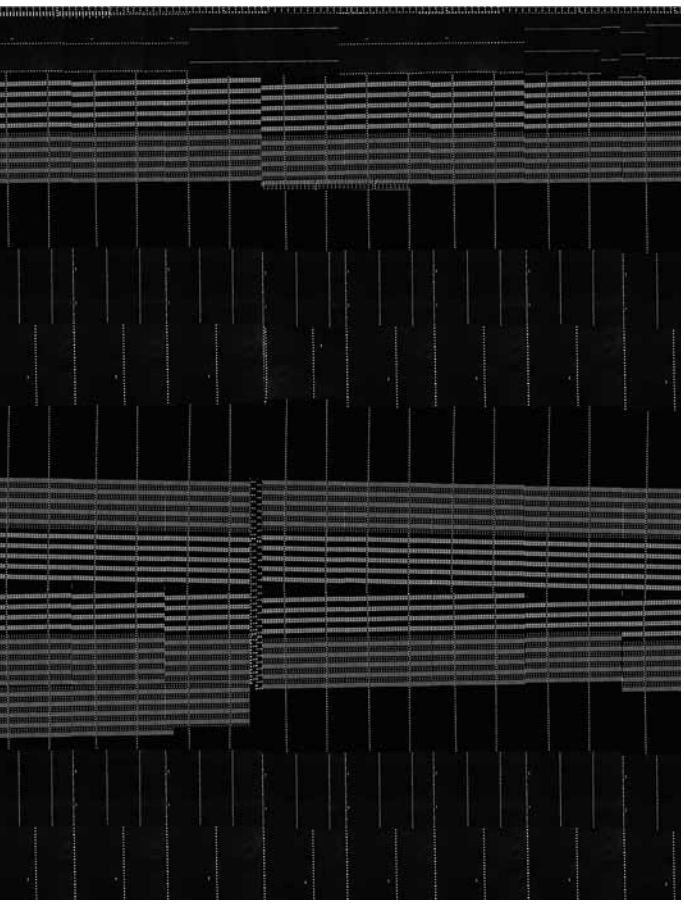
Diem Stefan | Predictive clinical features for response and outcome in patients with metastatic melanoma treated with anti-CTLA4 and anti-PD1 immunotherapy
Destination: The Royal Marsden NHS Foundation Trust, London, United Kingdom
CHF 67 100.– | Duration: 1. 9. 2014 – 31. 8. 2015 | BIL KLS 3333-02-2014

Dougoud-Chauvin Vérène | Pilot study of a real time consultation system to treat older patients using the Total Cancer Care database at Moffitt Cancer Center
Destination: H. Lee Moffitt Cancer Center, University of South Florida, Tampa, USA
CHF 30 700.– | Duration: 1. 1. 2015 – 30. 6. 2015 | BIL KLS 3352-02-2014

Feldmeyer Laurence | Identification of targets of miR-221 in cutaneous squamous cell carcinoma progression
Destination: Department of Dermatology, The University of Texas MD Anderson Cancer Center, Houston, USA
CHF 45 000.– | Duration: 1. 3. 2014 – 31. 7. 2015 | BIL KFS 3344-02-2014

Tischler Verena | Modulators of oncogenic signalling in lung cancer – understanding the mechanisms of resistance in settings of precision therapy
Destination: Abteilung Translationale Genomik, Universität zu Köln, Köln, Deutschland
CHF 46 400.– | Duration: 1. 1. 2016 – 31. 12. 2016 | BIL KFS 3402-02-2014





The lived experience of physicians: A call for research

While on the one hand we are witnessing the implementation of standardized care, the increasing influence of economic rationality and measurement of efficacy in health care systems, the promotion of evidence-based medicine (EBM) and the scientification/technologization of the art of medicine, a new paradigm has on the other hand emerged. In this paradigm, the patient is placed in the "centre" *(patient-centredness)* and should be approached as a whole person through practicing compassionate and empathic medical care, and sharing power and responsibility[1]. What we tend to forget in this story, however, is that the physician is also involved as a whole person, subjected to his "inner" (psychic) and "outer world" (context), and is thus an essential part of the provided care.

There is evidence that physicians working in different settings worldwide experience crises (e. g. of meaning, values or identity) and suffer (e. g. from anxiety, depression or drug dependency and alcoholism)[2,3]. For example, a 2008 article reported a "catastrophic collapse of morale" among hospital physicians in Japan; according to the authors, physicians' loss of morale has various but not unrelated possible causes including *budget constraints, shortage of physicians, long working hours, hostile medias, increasing lawsuits or violence by patients*[4]. When examining these causes, which are definitely not limited to Japanese society and culture, they seem to be also linked to changes in the rights and duties of both physicians and patients. The fact that the satisfaction of patients and their relatives appears to be of ever-increasing importance for hospital managers in the United States and most European countries and that hospital "users" are now

Friedrich Stiefel, MD
Head of the Service of Liaison Psychiatry, University Hospital of Lausanne (CHUV)

Céline Bourquin, PhD
Senior research fellow at the Service of Liaison Psychiatry, University Hospital of Lausanne (CHUV)

invited to voice their potential complaints about medical care in dedicated places reflect these changes[5,6]. To put it differently, the health care context has evolved and the physician, being part of this evolution, also deserves specific attention, be it from a scientific, clinical or health care policy perspective.

Thinking about physicianhood

As Mc Namara and Boudreau remind us, there is an important distinction between a "person" and a "patient", the patient being defined as "a person who suffers from an injury or disease; a sick person", and the state of "patienthood" resides within a whole person[7]. From the same perspective, "physicianhood" should refer to the healer, to the expert, as well as to the person. The following example from the oncology setting illustrates the complexity of the state of physicianhood in caregiving. In a qualitative study of oncologists' approaches to end-of-life care, Vicki et al. distinguished between two different "kinds" of oncologists based on descriptions of the most recent death of one of their inpatients[8,9]. On the one hand, oncologists who viewed their role as encompassing both biomedical and psychosocial aspects of cancer care described a clear method of communication about end-of-life care and reported an ability to positively influence patients' and families' coping with death. These oncologists, who adopted a broad view of their role, did not consider progression of the disease as a personal failure, and they perceived the provision of end-of-life care as very satisfying. On the other hand, oncologists who adopted primarily a biomedical role reported having a more distant relationship with patients and families, a sense of failure in not being able to alter the course of the disease, and an absence of collegial support. They did not feel that they could influence patients' coping and acceptance of death, and they made few recommendations about end-of-life treatment options in encounters with patients and families.

Physicians' defence and communication strategies

Like all physicians, oncologists are subjected to various influences – from their "inner" and "outer world" – that shape them and their lived experience accordingly. With regard to the "inner world", only a few studies have investigated the psychological challenges that physicians face[10]: What we observe is that topics like the limits of medical power and the transition from curative to palliative care are difficult challenges to handle for oncologists, as are also patients' emotions, such as sadness, anxiety and anger, or their imagined or real expectations. Depending on the oncologist's psychological structure – is he for example a very conscious or even anxious person – these challenges might mobilize so-called defence mechanisms, as those observed in cancer patients facing a life-threatening situation, such as denial (parts of the reality are filtered out) or rationalization (emotional aspects of the situation are not perceived). Defence mechanisms may protect the physician from immediate psychological suffering, but they might also hamper his perception of the patient's needs and in the long run increase feelings of isolation and burnout[11]. In addition, defence mechanisms are an indicator of the level of

stress a physician is subjected to. In a study, financially supported by Oncosuisse, we discovered that during an interview with a simulated patient in a palliative situation, on average one defence mechanism per minute is triggered[12]. In a subsequent study with real patients, we now intend to investigate what kind of communication strategies oncologists use in these situations and how patients perceive these strategies[13–15]. Despite the fact that the physician's "inner world" has important consequences for him, the patient and the health care (including decision-making processes), research addressing the physician himself is rare; for example, prior to the above-mentioned investigation, the study of defence mechanisms was restricted to patients, even in research on psychotherapy, where there is a heightened awareness of interpersonal processes. In other words, the physician as a subject and object of scientific interest is a very stimulating, clinically relevant, and barely investigated field of research.

Context and dominant discourses

With regard to the "outer world" of physicians, a similar observation can be made: The physician's context is widely neglected in research. There have been some studies on the socialization processes and the "hidden curriculum" that both impact students' development during medical education[16–18]; but many contextual factors remain uninvestigated, such as the various and often conflicting constraints – the pressure to produce cost-effectiveness and the demand for empathic communication, the standardization of care and the call for patient-centredness, etc. – or the dominant discourses physicians are subjected to. Contextual factors related to the medical apparatus as well as the societal dominant discourses on medicine, disease, physicians, and patients shape collective beliefs and, ultimately, influence the practice of medicine. For example, the evolving representation of the cancer patient, nowadays encouraged to be a triumphant "survivor"[19], or the competing types of cancer with regard to visibility, illustrated by the prominence and dominance of breast cancer in the popular and biomedical imaginary which has led to the "breast-cancer-ization" of cancer survivorship[20], have an impact on what patients experience and how they are encountered by physicians. Such representations might not only shape the perceptions of types of cancer and divide them into "good cancers" and "bad cancers" but also surpass them and segregate "good patients" from "bad patients"[21]; good ones being for example the pure and innocent patient with breast cancer – a figure who is also attractive with regard to fundraising – and bad ones being an ashamed and silenced patient with a seemingly self-inflicted cancer of the oral cavity due to alcohol and tobacco abuse.

A call for physician-centred research

Again, whereas social representations of disease and aspects of care have been studied in patients and healthy populations, the physicians' representations remain neglected, even though they are an important part of this interwoven tissue of collective beliefs, experiences, and behaviours. We have noticed that when physicians are invited to express themselves on issues of end-of-life care, which is an especially sensitive topic exposed to dominant discourses and rhetoric on death and dying, they do not spontaneously report contextual factors[22,23].

Are these factors perceived but remain unvoiced, or are they scotomized? What we know is that there is a lack of attention to the contextual content of physicians' representations and to the various determinants of their experiences and behaviours, which is maintained by the researchers and the physicians. We therefore believe that medicine, and especially oncology, which is at a crossroad of societal representations with regard to the threat of disease[19,20], should benefit from critical research – especially by the social sciences – investigating the "inner" and "outer world" of the physician. Such "physician-centred" research could produce most valuable information for patients, physicians, the health care systems and society as a whole.

Friedrich Stiefel, MD
Friedrich Stiefel, born in Wädenswil near Zurich, is the head of the Service of Liaison Psychiatry at the University Hospital of Lausanne (CHUV) since 2006 and full professor at the University of Lausanne. His clinical work covers the whole range of liaison psychiatry with a special focus in psycho-oncology. His current research focuses on communication between physicians and patients and psychotherapeutic interventions for patients with serious illnesses.
Tel. +41 (0)21 314 10 84
frederic.stiefel@chuv.ch
www.chuv.ch/psychiatrie/fiches-psychiatrie_details.htm?fiche_id=310

Céline Bourquin, PhD
Céline Bourquin is a senior research fellow at the Service of Liaison Psychiatry at the University Hospital of Lausanne (CHUV). She studied history, linguistics, and anthropology at the University of Neuchâtel and completed a doctorate in life sciences at the University of Lausanne in 2012. Her research interests focus on clinical communication, especially with regard to breaking bad news, communication in cancer care, and end-of-life communication.
Tel. +41 (0)21 314 42 31
celine.bourquin@chuv.ch

References

1. Hutchinson TA ed. *Whole Person Care: A New Paradigm for the 21st Century.* New York, New York, USA: Springer; 2011.
2. Meier DE, Back AL, Morrison RS. The inner life of physicians and care of the seriously ill. *JAMA.* 2001;19:3007–3014.
3. Cole TR. The art of medicine: the suffering of physicians. *Lancet.* 2009;24:1414–1415.
4. Yasunaga H. The catastrophic collapse of morale among hospital physicians in Japan. *Risk Manag Health Policy.* 2008;1:1–6.
5. Jangland E, Gunningberg L, Carlsson M. Patients' and relatives' complaints about encounters and communication in health care: evidence for quality improvement. *Patient Educ Couns.* 2009;75:199–204.
6. Schaad B, Bourquin C, Bornet F, Currat T, Saraga M, Panese F, Stiefel F. Dissatisfaction of hospital patients, their relatives, and friends: analysis of accounts collected in a complaints center. *Patient Educ Couns.* In press.
7. Mc Namara H, Boudreau JD. Teaching whole person care in medical school. In: Hutchinson TA, ed., *Whole Person Care: A New Paradigm for the 21st Century.* New York, New York, USA: Springer; 2011:183–200.
8. Vicki AJ, Mack J, Matsuyama R, Lakoma MD, Sullivan AM, Arnold RM, Weeks JC, Block SD. A qualitative study of oncologists' approaches to end-of-life care. *J Palliat Med.* 2008;11:893–906.
9. Von Gunten CF. Oncologists and end-of-life care. *J Palliat Med.* 2008;11:813.
10. Stiefel F, Krenz S. Psychological challenges for the oncology clinician who has to break bad news. In: Surbone A, Zwitter M, Rajer M, Stiefel R, eds. *New Challenges in Communication with Cancer Patients.* Berlin, Germany: Springer; 2012:51–62.
11. Bernard M, de Roten Y, Despland JN, Stiefel F. Communication skills training and clinicians' defenses in oncology: an exploratory, controlled study. *Psycho-Oncology.* 2010;19:209–215.
12. Stiefel F, Despland JN, de Roten Y. Effects of communication skills training on oncology clinicians' communication styles and defense mechanisms. Oncosuisse grant, Project number: 01595-08-2004.
13. Despland JN, Stiefel F, de Vries M, de Roten Y, Luthi F. Communication in cancer care: the relationship between clinician's defense mechanisms, patient satisfaction and information recall. Oncosuisse grant, Project number: 02338-02-2009.
14. Despland JN, Stiefel F, de Vries M, de Roten Y. Communication in cancer care: the relationship between clinician's defense mechanisms, patient satisfaction and information recall. Oncosuisse grant, Project number: 02828-08-2011.
15. Stiefel F, Bourquin C. Communication in cancer care: what is good for the patient? – the cancer patient perspective. Swiss Cancer Research foundation grant, Project number: 3459-08-2014.
16. Becker HS, Geer B, Hughes E, Strauss AL. *Boys in White: Student Culture in Medical School.* London, UK: Transaction Publishers; 1977.
17. Hafferty FW, Franks R. The hidden curriculum, ethics teaching, and the structure of medical education. *Acad Med.* 1994;69:861–871.
18. Kenny N, Shelton W. *Lost Virtue: Professional Character Development in Medical Education.* Oxford, UK: Elsevier; 2006.
19. Bell K. Remaking the self: trauma, teachable moments, and the biopolitics of cancer survivorship. *Cult Med Psychiatry.* 2012;36:584–600.
20. Bell K. The breast-cancer-ization of cancer survivorship: implications for experiences of the disease. *Soc Sci Med.* 2014;110:56–63.
21. Stiefel F, Bourquin C. Good cancers–bad cancers, good patients–bad patients? *J Thorac Oncol.* 2015;10:407–408.
22. Stiefel F, Singy P. Communication skills in end-of-life care. Swiss National Science Foundation, Project number: 406740-139248.
23. Stiefel F. Communication skills in end-of-life care. Swiss National Science Foundation, Bonus of excellence, Project number: 406740-139248/2.

Results of some completed research projects 2014

Project
PROVIVO: Patient Reported Outcome in view of symptom experience of late effects and self-management in adult long-term survivors after allogeneic haematopoietic stem cell transplantation – a mixed methods study
Institut für Pflegewissenschaft, Universität Basel, Basel
CHF 112 900.– | Duration: 1.1.2011 – 31.7.2014 | KFS 2705-08-2010

Project coordinator
Prof. Sabina De Geest, PhD | sabina.degeest@unibas.ch

Focusing on health behaviours of cancer survivors

Thanks to blood stem cell transplantation, more and more people are surviving blood cancer. But what about their health-relevant behaviour after completion of their intensive treatment? Compared to the general population, cancer survivors smoke less, but they also eat fewer fruits and vegetables, as researchers at the University of Basel show in a study supported by the Swiss Cancer Research foundation.

Blood stem cell transplantation not only saves the lives of many people but also changes their lives – and does so for a long time after the treatment. This was shown by a survey of 376 persons that had received stem cells from a donor one to 33 years previously. The survey participants, all survivors of leukaemia or lymphoma thanks to transplantation, filled out a questionnaire providing information on various aspects of their health behaviours.

Sabina De Geest and her research team at the Institute of Nursing Science at the University of Basel were interested not only in whether the cancer survivors took their prescribed medications as directed but also in how intensively and how often they exercised, what they ate, and how much alcohol they consumed. Compared with data from the Swiss Health Survey (and thus with the general population in Switzerland), two things were noticeable: First, the cancer survivors avoid some health-impairing behaviours: They smoke less, and they drink on average 1.5 servings of alcohol per week, which is only one-third of the average amount of alcohol consumed in Switzerland.

Second, however, the cancer survivors also do less to maintain their health than the general population: Twice as many survivors are physically inactive, and only very few consume at least three or more portions of fruits and vegetables daily. Another worrying finding according to the researchers is that two-thirds of the cancer survivors prescribed immunosuppressant medications due to their new blood stem cells do not take their medications as directed; they take single doses hours later than instructed, for example, or they do not take their medications at all.

As the researchers write in their paper published in *Bone Marrow Transplantation,* their work has several important clinical implications. The information can be used to "assist survivors with their disease self-management practises" and can allow practitioners to develop interventions to increase survivors' positive health behaviours. For even though fatigue can be a barrier to exercise, it can be reduced by regular physical activity. Interventions that help people to be more physically active after stem cell transplantation would also be important to prevent possible long-term risks of transplantation, such as diabetes or cardiovascular disease.

Reference

Kirsch M, Götz A, Halter JP, Schanz U, Stussi G, Dobbels F, De Geest S. Differences in health behavior between recipients of allogeneic haematopoietic SCT and the general population: a matched control study. *Bone Marrow Transplant.* 2014;49:1223–1230.

Project
Palliative Care Education in Primary Care
Institut für Hausarztmedizin, Universitätsspital Zürich, Zürich
CHF 80 000.– | Duration: 1. 11. 2011 – 31. 10. 2014 | KLS 2934-02-2012

Project coordinator
Prof. Thomas Rosemann, MD | thomas.rosemann@usz.ch

Potential for improvement for dying at home

Only when family members, nurses, and physicians work together optimally can patients stay at home at the end of life. In a research study supported by the Swiss Cancer Research foundation, researchers at the Institute of Primary Care at University Hospital Zurich have consolidated the different perspectives and approaches of the professionals involved.

Most people prefer to die at home – however, only 25 % of the dying are at home at the end. There are many reasons for this. One reason is that so many things have to be right to make it possible, including not least cooperation among family members, nurses, and physicians. How do the professionals involved perceive the situation, what problems do they face, and do they see measures that could be taken to improve the situation?

A team of researchers at the Institute of Primary Care at University Hospital Zurich took on these questions and gathered information in structured discussions with different focus groups – consisting of 13 primary care physicians, 12 Spitex (external nursing service) nurses, and 10 nursing home nurses. "Thanks to these interviews, we were able to get to the heart of many issues", says Irène Bachmann-Mettler, one of the two lead investigators.

The greatest problems occur when the terminally ill want to die in their own homes. This happens in only one-fifth of cases, but precisely with these cases it was revealed that complex palliative care situations are almost impossible to manage at home with today's healthcare system, Bachmann-Mettler reports. "Family members make enormous efforts, but if the person dying has breathing difficulties, for instance, care by specialists is needed around the clock." Although there are services available such as external oncology nursing services, these are usually not covered 100 % by health insurances and are funded instead by donations or by the municipalities. With the current pressure to cut costs, many municipalities are finding it difficult to finance nursing care at night. For this reason, the researchers are in favour of the creation of cross-municipality structures and access to specialized palliative care for all patients.

Another problematic issue that the focus group interviews brought to light concerns the position of the primary care physician. Many physicians have difficulty calling in other professionals to be involved in care of the patient and working together intensively with specialized services, for instance. Bachmann-Mettler believes that a possible solution would be to develop an interlaced nursing and medical outpatient palliative care service. This will be needed even more in the future, for according to the prognosis of the Federal Statistical Office, the number of persons over the age of 65 in Switzerland will double in the next 50 years. With the increasing number of patients with multimorbidity and chronic illnesses, palliative care will also become more and more important.

List of approved research projects in 2014

More information about the funded projects can be found on www.krebsliga.ch/researchprojects

Total funds allocated: CHF 1 139 500.–

Barlevy Dorit | Comparative study in adolescent oncofertility decision making
Institut für Bio- und Medizinethik, Universität Basel, Basel
CHF 25 000.– | Duration: 1. 2. 2015 – 31. 1. 2016 | KFS 3520-08-2014

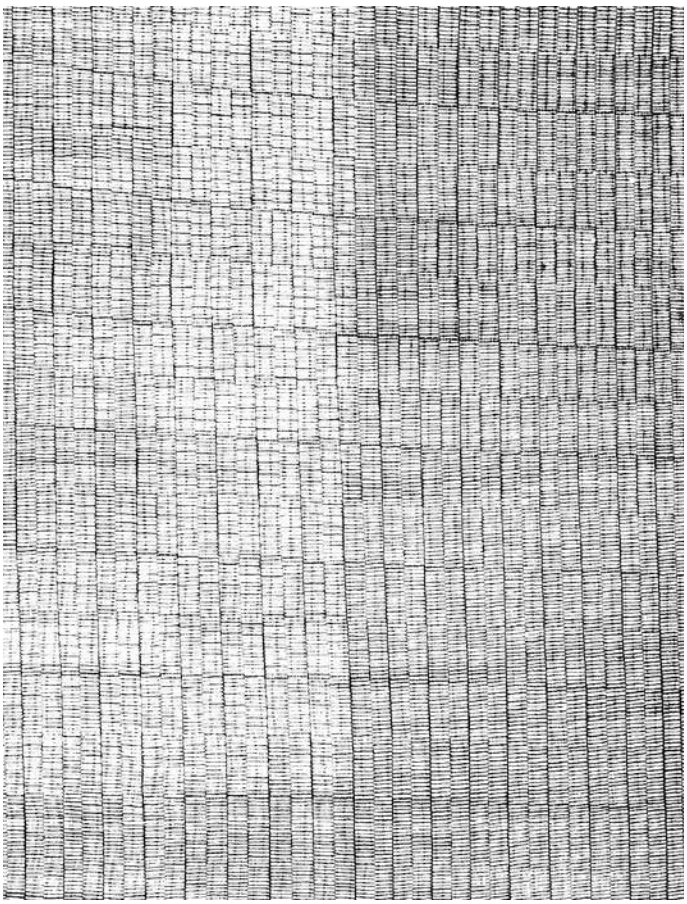
Favez Nicolas | Women facing breast cancer. The effect of self-disclosure on distress at time of surgery: the impact of a "diagnosis interview"
Faculté de psychologie et des sciences de l'éducation, Université de Genève, Genève
CHF 260 200.– | Duration: 1. 1. 2015 –31. 12. 2017 | KLS 3396-02-2014

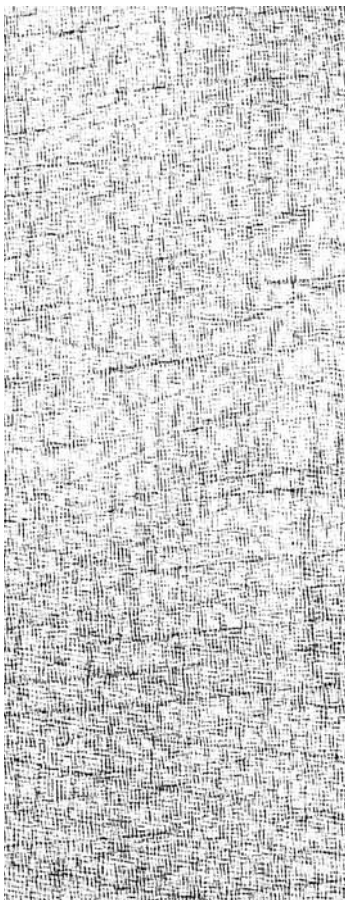
Gamondi Claudia | An interview study on Swiss palliative care physicians' opinions concerning hastened death practices
Cure palliative, Istituto Oncologico della Svizzera Italiana (IOSI), Bellinzona
CHF 58 700.– | Duration: 1. 6. 2014 –30. 5. 2015 | KFS 3347-02-2014

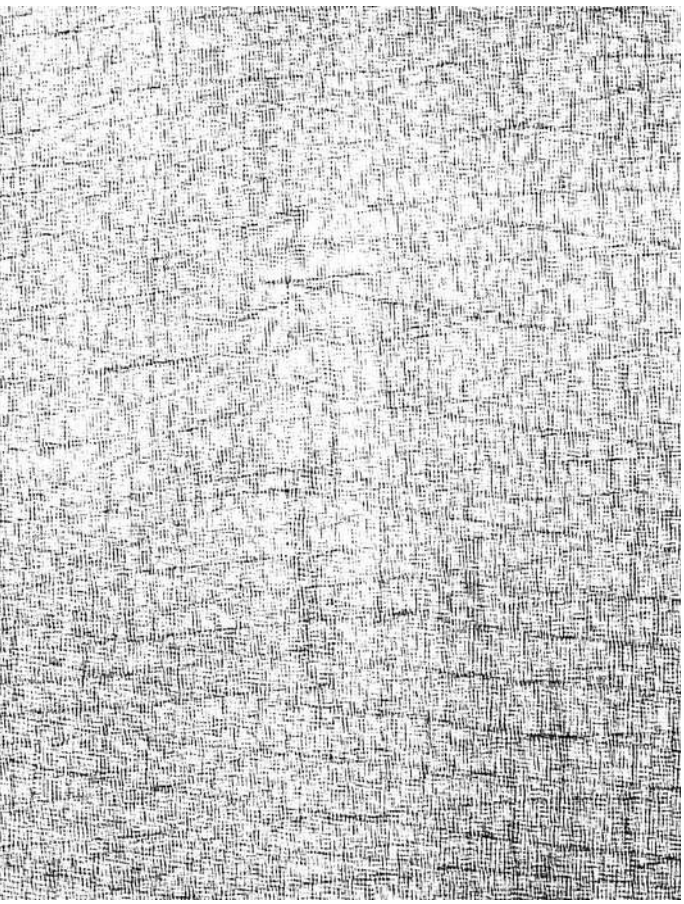
Hess Viviane | Stress, exercise behaviour and survival in patients with newly diagnosed glioblastoma and in a close partner (TOGETHER-study): a prospective multicentre cohort study
Klinik für Onkologie, Universitätsspital Basel, Basel
CHF 231 100.– | Duration: 1. 3. 2014 –28. 2. 2017 | KFS 3398-02-2014

Landolt Markus | How families cope with child cancer? A longitudinal study on the role of "we-appraisals" on child's health-related quality of life
Abteilung Psychosomatik und Psychiatrie, Kinderspital Zürich, Zürich
CHF 325 100.– | partially financed by a foundation | Duration: 1. 12. 2014 –30. 4. 2018 | KFS 3325-02-2014

Stiefel Friedrich | Communication in cancer care: what is good for the patient? – The cancer patient perspective
Service de psychiatrie de liaison, Centre hospitalier universitaire vaudois (CHUV), Lausanne
CHF 239 400.– | Duration: 1. 1. 2015 –31. 12. 2016 | KFS 3459-08-2014







Sociodemographic and socioeconomic inequalities in cancer screening in Switzerland

Sociodemographic and socioeconomic status (SES) influence cancer risk. Factors such as income and education are associated with the severity and risk of cancers. Men and women with lower socioeconomic status present higher risks of developing cancer, such as cervical cancer and tobacco- and alcohol-related cancers[1,2]. Evidence also shows that there tends to be an increased risk of breast cancer in women with low SES or low social class compared to women with high SES. Conversely, risk of some cancers (like melanoma and prostate cancer) are more often associated with high SES[2]. Social environment – the physical and social setting in which people live – also influences cancer risk. For example, persons living alone have higher cancer incidence rates than persons living with a partner[1].

Some of the association of SES and social environment with cancer risk can be mediated by differential use of cancer screening. Routine cancer screening is becoming more frequent in most developed societies, but despite its development, cancer screening disparities within populations remain. International research showed that cancer screening is more frequent among the more educated, more affluent, and those living with a partner[3]. Health insurance coverage and physician access barriers are also important determinants of lower cancer screening, as observed for mammography and colorectal screening. Employment status (unemployed versus employed) and living area (rural versus urban areas, notably via differences in physician density) can also influence cancer screening practices.

Idris Guessous, PhD, MD
Head of the Unit of Population Epidemiology, Geneva University Hospitals

Increasing trend of forgoing healthcare for economic reasons

In Switzerland, cancer screening inequalities have been little documented. It has been postulated for many years that the universal health insurance coverage, high levels of living standards, wealth, and well-being in Switzerland would lead to limited inequalities in health and healthcare access and, therefore, in access to cancer screening. The recent evolution in Europe indicates that socioeconomic conditions are changing. Switzerland is not spared, and current socioeconomic conditions are accentuating disparities in the general population. We recently showed that among the adult population in the canton of Geneva, more than 30 % of the lowest income group had forgone healthcare for economic reasons, although all participants had health insurance[4]. About a quarter of them did not consult general or specialist physicians for economic reasons. In a more recent study, we showed that the trend of forgoing healthcare for economic reasons was increasing[5]. Thus, a substantial proportion of the Swiss adult population may miss opportunities to discuss cancer screening with their healthcare providers. Even when covered by health insurance, opportunistic screening tests have a cost: Patients have to pay for their healthcare up to an annual deductible limit (between 300 and 2500 francs). Beyond this limit, patients have to pay 10 % of the costs, up to an annual upper limit of 700 francs. With respect to organized cancer screening in Switzerland, such as the systematic mammography screening programme, the costs are paid for entirely by the insurance companies with no deductible limit for this benefit in some cantons, but in other cantons a co-pay is required. Thus, cancer screening represents a variable cost for individuals, depending on their SES, their annual healthcare use, and the canton in which they live. Since screening represents a health behaviour the benefit (if any) of which is observed only in the future, the cost of cancer screening for individuals and families with low SES may lead them to postpone this behaviour, especially because individuals have no symptoms. Another reason for postponing screening may be that these tests might incur additional economic costs in case of positive results. Though cost is likely a direct barrier to cancer screening among individuals with low incomes, there are several other mechanisms by which income may influence cancer screening. Positive attitude toward screening is an important predictor of cancer screening, which was not only lower among people with lower incomes but has been shown to mediate the association between income and cancer screening in a Swiss study population[6].

The example of colorectal cancer screening

Worldwide, 1 361 000 people were diagnosed with colorectal cancer, and there were 694 000 deaths related to colorectal cancer in 2012. The majority of colorectal cancers are diagnosed in more developed countries like Switzerland, where more than 4000 cases are diagnosed each year. To reduce new cases and mortality of colorectal cancer, screening (stool test annually, sigmoidoscopy every five years with stool test periodically, or colonoscopy every ten years) is recommended for people aged 50 to 75.

Although screening reduces colorectal cancer mortality, there is currently no national colorectal cancer screening programme in Switzerland, and colorectal cancer screening among Swiss residents is low. In the 2007 Swiss Health Interview Survey, only 13 % of adults aged 50 years or older had had a hemoccult test or endoscopy in the past five years for colorectal cancer screening[7]. In addition to deficient organization, social inequalities in colorectal cancer screening utilization have been noted in Switzerland, whereby adults in the highest income bracket were 70 % more likely to have a screening endoscopy, adjusting for sociodemographic factors, health utilization, and behaviours[7].

In 2013 colorectal cancer screening was added to the basic health insurance plan in Switzerland as a covered benefit. As a consequence, the implementation of organized colorectal cancer screening has been proposed in several cantons (e. g. Vaud, Geneva). When discussing these programmes, SES and social environment factors influencing screening participation should be considered carefully, because lower income has been associated with lower adherence to colorectal screening programmes in other European countries, even if these programmes were free of charge[8]. Mailing an at-home stool test kit could minimize barriers such as time off work and transportation issues. In addition, specific social environment and SES factors influencing colorectal cancer screening among older persons should be of particular interest. Indeed, the incidence of colorectal cancer increases with age, with nearly two-thirds of patients diagnosed at the age of 65 years or older. Although some of the colorectal cancer incidence in persons 65 years or older can be decreased by colorectal cancer screening before the age of 65, it is important that older persons comply with current screening guidelines for colorectal cancer prevention.

Identifying barriers and facilitators

Improving older persons' participation in colorectal cancer screening requires the identification of factors – including social environment and SES factors – that influence screening participation, and the incorporation of this knowledge when designing programmes. A number of SES barriers (factors that limit screening participation) and facilitators (factors that improve screening participation) have been identified for individuals aged 50 and older, but little is known about the SES factors that may affect participation specifically among older persons. On behalf of the US National Colorectal Cancer Roundtable Screening Among the 65 Plus Task Group, we systematically reviewed factors that are the most consistently mentioned in the literature as either barriers to or facilitators of colorectal cancer screening in older persons[9]. We identified 83 studies. Low level of education, African American or Hispanic ethnicity, and female gender were the most frequently reported barriers, whereas being married or living with a partner was the most frequently reported facilitator. The most cited barrier related to healthcare providers was lack of screening recommendation by a physician; having a usual source of care was a commonly reported facilitator.

In Switzerland, analyses of socioeconomic and social environment determinants of health in general are limited and those related to cancer screening are (almost) non-existent. The ongoing project entitled "Sociodemographic and socioeconomic inequalities in cancer screening, Switzerland 1992–2012: trend analyses based on the Swiss Health Survey" will use data from the Swiss Health Survey to determine the evolution of cancer screening inequalities in Switzerland over the past two decades. These analyses are crucial for determining whether cancer screening inequalities are on the rise, and they may provide insights into strategies to attenuate any inequalities.

Acknowledgments The author thanks all the collaborators of the ongoing project and more specifically Stéphane Cullati (Geneva University Hospitals, Geneva) and Stacey Fedewa (Emory University, Atlanta, USA).

Idris Guessous, MD
Idris Guessous, who was born in Lausanne, has been head of the Unit of Population Epidemiology at Geneva University Hospitals since 2009. In addition, he is assistant professor at Emory University (United States) and also affiliated with the Institute of Social and Preventive Medicine of the University Hospital of Lausanne (CHUV). He runs the "bus santé" project in Geneva. His research activities deal with chemoprevention, pharmacogenomics and screening for chronic illnesses.
Tel. +41 (0)22 305 58 61
idris.guessous@hcuge.ch
www.hug-ge.ch/medecine-premier-recours/uep

References

1. Dalton SO, Schüz J, Engholm G, Johansen C, Kjær SK, Steding-Jessen M, Storm HH, Olsen JH. Social inequality in incidence of and survival from cancer in a population-based study in Denmark, 1994–2003: summary of findings. *Eur J Cancer.* 2008;44:2074–2085.
2. Bouchardy C, Schuler G, Minder C, Hotz P, Bousquet A, Levi F, Fisch T, Torhorst J, Raymond L. Cancer risk by occupation and socioeconomic group among men: a study by the Association of Swiss Cancer Registries. *Scand J Work Environ Health.* 2002;28 Suppl 1:1–88.
3. Swan J, Breen N, Coates RJ, Rimer BK, Lee NC. Progress in cancer screening practices in the United States: results from the 2000 National Health Interview Survey. *Cancer.* 2003;97:1528–40.
4. Wolff H, Gaspoz JM, Guessous I. Healthcare renunciation for economic reasons in Switzerland. *Swiss Med Wkly.* 2011;141:w13165.
5. Guessous I, Gaspoz JM, Theler JM, Wolff H. High prevalence of forgoing healthcare for economic reasons in Switzerland: a population-based study in a region with universal health insurance coverage. *Prev Med.* 2012;55:521–527.
6. Cullati S, Charvet-Berard AI, Perneger TV. Cancer screening in a middle-aged general population: factors associated with practices and attitudes. *BMC Public Health.* 2009;9:118.
7. Spaeth A, Zwahlen M. Use of lower gastrointestinal endoscopy and fecal occult blood test in the 2007 Swiss Health Interview Survey respondents aged 50 years and older. *Endoscopy.* 2013;45:560–566.
8. von Wagner C, Baio G, Raine R, Snowball J, Morris S, Atkin W, Obichere A, Handley G, Logan RF, Rainbow S, Smith S, Halloran S, Wardle J. Inequalities in participation in an organized national colorectal cancer screening programme: results from the first 2.6 million invitations in England. *Int J Epidemiol.* 2011;40:712–718.
9. Guessous I, Dash C, Lapin P, Doroshenk M, Smith RA, Klabunde CN. National Colorectal Cancer Roundtable Screening among the 65 Plus Task Group: colorectal cancer screening barriers and facilitators in older persons. *Prev Med.* 2010;50:3–10.

Results of some completed research projects 2014

Project
Impact of genetic and familial factors on occurrence, treatment and outcomes of breast and other cancers. Studies from the first population-based Familial Breast Cancer Registry in Switzerland
Registre genevois des tumeurs, Genève
CHF 302 500.– | Duration: 1. 8. 2012 – 31. 12. 2014 | KFS 2946-02-2012

Project coordinator
Prof. Christine Bouchardy, MD | christine.bouchardymagnin@unige.ch

The protective impact of family history

Women whose mothers or sisters have breast cancer receive on average better treatment than women without relatives with breast cancer. The family history sensitizes patients and motivates them to comply with treatment, as researchers at the Geneva Cancer Registry found in a study funded by the Swiss Cancer Research foundation.

Some years ago, Christine Bouchardy and researchers at the Geneva Cancer Registry found that breast cancer prognosis has a heritable component. Up to then, tumour characteristics especially were considered to be associated with survival, such as whether the cancer was an aggressive form or whether the cancer was diagnosed at a late stage. But independent of type and stage of the tumour, the genetic predisposition of the women also seems important for breast cancer prognosis: "A woman whose mother or sister has survived breast cancer has herself better chances than women whose relatives died from cancer", says Bouchardy.

For a new study, Bouchardy's team examined disease data on 2678 women who were diagnosed with cancer between 2001 and 2010 in the canton of Geneva. Of these, 833 women – almost one-third – had cases of breast cancer in their family. They received better treatment, according to the recognized quality criteria of EUSOMA, the European Society of Breast Cancer Specialists, than women without a family history of breast cancer did. For instance, women with a family history of breast cancer more often received radiotherapy after breast-conserving removal of the tumour to prevent local recurrence. And they had less often an unnecessary removal of a lymph node or inappropriate hormonal therapy than women without a family history.

It is not entirely clear how these differences in treatment come about. The researchers suspect that patients with close relatives with breast cancer have more respect of the disease and for this reason show greater compliance with the prescribed treatment than women without a family history. In any case: "Our results send a reassuring message", says Bouchardy. "A person who has a case of breast cancer in the family receives high-quality treatment." And accordingly has a 90% chance of surviving at least for five years after diagnosis.

Reference

Verkooijen HM, Hartman M, Usel M et al.
Breast cancer prognosis is inherited independently of patient, tumor and treatment characteristics.
Int J Cancer. 2012;130: 2103–2110.

Project
Effectiveness of transition to adult care after childhood cancer
Seminar für Gesundheitswissenschaften und Gesundheitspolitik, Universität Luzern, Luzern
CHF 283 300.– | Duration: 1. 4. 2011 – 31. 12. 2014 | KLS 2631-08-2010

Project coordinator
Prof. Gisela Michel, PhD | gisela.michel@unilu.ch

Lack of systematic follow-up care

More and more children are surviving cancer. When they enter adulthood and leave the care of the paediatric oncologist, their follow-up medical care is too often neglected. Communication with former patients also needs improvement, as researchers at the University of Lucerne have found in a study supported by the Swiss Cancer League.

Great medical advances have been made in the fight against childhood cancer. Whereas some decades ago most children with cancer did not survive, today 80 % of children with cancer can be treated successfully: This is a wonderful development that is also leading to an ever-increasing number of adult survivors of childhood cancer. But how well is the healthcare system in Switzerland prepared to meet the challenge of avoiding and preventing late effects of childhood cancer treatment?

"There is no systematic follow-up. The transition of former paediatric oncology patients to adult primary care needs to be better organized", says Gisela Michel at the University of Lucerne. In a research project funded by the Swiss Cancer League, Michel's team followed 746 persons, recording from whom they received medical care when they left the care of their paediatric oncologists. Only in one-third of cases did the researchers find optimal care. "Some survivors of childhood cancer still receive care from a paediatric oncologist when they are 40 years old", Michel says. But for ideal care and so that paediatricians also have time for new young patients, survivors of childhood cancer should be transitioned to adult care at age 25 at the latest.

But more worrying than the lack of transitioning (in only rare cases) are other findings of Michel's study: More than half of the former patients are discharged from paediatric oncology care without being referred to someone else – such as a primary care physician – for specific follow-up care. This is even true for survivors who have an increased risk of late effects. Although survivors of childhood cancer in the less than optimally cared for group have about the same health status as survivors in the group receiving optimal care, those with less optimal care consult physicians or hospitals more often. "Follow-up care also means preventing health problems or alleviating them at an early point in time. But when patients seek out physicians on their own, it is often too late for that", Michel explains.

Michel and her team also found that there is great room for improvement in the communication with survivors of childhood cancer. Normally, only the physician receives referral information. It is the exception rather than the rule that patients leaving paediatric oncology care are provided with written information on their cancer, treatment, follow-up, or long-term health risks.

Reference

Gianinazzi ME, Rueegg CS, Essig S et al. Lost in transition? Follow-up care after childhood cancer in Switzerland. In preparation.

List of approved research projects in 2014

More information about the funded projects can be found on www.krebsliga.ch/researchprojects

Total funds allocated: CHF 1 250 100.–

Althaus Christian | What will be the impact of human papillomavirus (HPV) vaccination on HPV-associated cancers in Switzerland? A mathematical modelling study
Institut für Sozial- und Präventivmedizin, Universität Bern, Bern
CHF 261 900.– | Duration: 1. 2. 2015 – 31. 7. 2018 | KFS 3533-08-2014

Ansari Marc | Comprehensive international research programme for childhood liver cancer
Département de pédiatrie, Division d'onco-hématologie pédiatrique, Hôpitaux Universitaires de Genève (HUG), Genève
CHF 50 400.– | Duration: 1. 2. 2014 – 31. 1. 2016 | KFS 3351-02-2014

Bohlius Julia | Cancer in HIV-infected persons in Malawi: a probabilistic record linkage study with the Malawi National Cancer Registry
Institut für Sozial- und Präventivmedizin, Universität Bern, Bern
CHF 82 250.– | Duration: 1. 7. 2014 – 30. 6. 2016 | KFS 3399-02-2014

Ess Silvia | Outcomes in breast cancer: how do processes of care predict outcomes in real life settings?
Krebsregister St. Gallen-Appenzell, Krebsliga Ostschweiz, St. Gallen
CHF 250 400.– | Duration: 19.10.2014–18.10.2016 | KFS 3381-02-2014

Kuehni Claudia E. | Ototoxicity, pulmonary outcomes and quality of life in Swiss childhood cancer survivors
Institut für Sozial- und Präventivmedizin, Universität Bern, Bern
CHF 364 000.– | Duration: 1. 7. 2014 – 30. 6. 2017 | KLS 3412-02-2014

Spycher Ben D. | Spatial and spatio-temporal clustering of childhood cancer: the role of infections and environmental hazards
Institut für Sozial- und Präventivmedizin, Universität Bern, Bern
CHF 241 150.– | Duration: 1. 1. 2015 – 31. 12. 2016 | KFS 3515-08-2014

We need your support!

To better understand the causes of cancer, prevent its development, detect it earlier, and treat the disease more effectively, continued strong investment in research is needed. With our work, we support researchers in their intensive efforts to improve the understanding of cancer and contribute to the development of improved treatment methods and optimal care of persons with cancer and their families.

Help us in our fight against cancer.
Thank you very much!

Donations account PC 30-3090-1
Swiss Cancer Research foundation, Bern
www.krebsforschung.ch

Printed on non-chlorine-bleached paper.

krebsliga schweiz
ligue suisse contre le cancer
lega svizzera contro il cancro

krebsforschung schweiz
recherche suisse contre le cancer
ricerca svizzera contro il cancro
swiss cancer research