DCB
Global Center for
Technology Innovation
in Diabetes

Annual Report 2023/2024

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Introduction

The 2023/24 fiscal year was a year of major milestones and great progress for us at the Diabetes Center Berne (DCB). We are proud to have successfully completed our first large-scale projects. One project that we are particularly proud of is the third edition of our Open Innovation Challenge, which took our total number of partnerships with start-ups to around 100 start-ups from over 30 different countries. We are already looking forward to the next Open Innovation Challenge and the chance to collaborate with even more new innovative teams.

Furthermore, Professor Lilian Witthauer and her team in the field of smart sensing along with Professor José Garcia-Tirado in the field of closed-loop systems are working on projects to improve the lives of people with diabetes. These projects exemplify how we can effectively translate research findings into practical applications. Since April 2024, Professor Lisa Koch has been bringing the exciting topics of data analysis and artificial intelligence to DCB.

Many thanks to our Advisory Board and our patron Willy Michel. Their support enables us to position DCB as an international centre of excellence for diabetes technology.

Derek Brandt, May 2024

Our Vision

There are various pieces that make up the puzzle of our vision and mission, but it all boils down to one thing:

Making life better for people with diabetes.

Our Mission

TECHNOLOGY
We live and breathe diabetes technology.

SOLUTIONS
Together with our professors, we turn ideas into solutions.

WELL-BEING
We make a positive contribution to reducing healthcare costs and improving ecological and social well-being.

EXPERTISE
We close gaps by providing expertise, services, funding and a home for people with great ideas, projects and ventures.

COMMUNITY
We identify unmet needs by engaging with the diabetes community.

INNOVATION
We are a hub for joint development of diabetes innovations.

PROFESSIONAL NETWORK
We are building an international, interdisciplinary network of trusted partners to shape the future of diabetes management and prevention.

WORKING TOGETHER
We create an atmosphere of trust, entrepreneurial spirit, and collaboration – a team that is enjoyable to work with.

DCB Facts and Figures

No. of DCB employees	19
ISO 9001:2016 certified	23 Aug 2022 to 22 Aug 2025
No. of mentoring and training sessions	300
No. of professorships at DCB	4
No. of start-ups supported	>120
No. of in-house clinical trials	3
No. of ideas from the Innovation Challenge	70
No. of countries where ideas originated	19

DCB 5-year Goals (for 2027)

Leading European centre for diabetes technology

Professorships acting as a beacon for DCB

Established clinical development partner

A vibrant innovation and start-up environment

DCB-supported products on the market

A great place to work

The DCB Team

The DCB now consists of 19 employees, as well as the associated research groups of Professors Lilian Witthauer (Sensing & Monitoring Lab), José Garcia-Tirado (PrecisionLab), Lisa Koch (Machine Learning in Medicine Lab) and Maria Luisa Balmer (TrimLab).

Several holocratically organised teams work together to implement the DCB vision:

- Data Science
- Innovation / Business Development
- Clinical
- Communication
- Operations
- Research
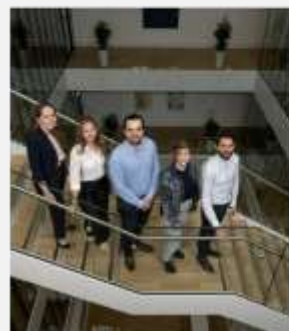
Data Team

OBJECTIVES / ACTIVITIES / PRIORITIES

Developing an efficient data infrastructure and intelligent data products

- Working with start-ups and partners in the industry by providing statistical support
- Helping to develop and validate algorithms through state-of-the-art data science
- Facilitating the collection of clinical data through the implementation and maintenance of REDCap projects
- Developing a data infrastructure to support the research and development of diabetes technology

Data Team

DCB's data team has continued to expand the REDCap (Research Electronic Data Capture) electronic data capture system and has worked on a total of 15 REDCap projects. The team has started working with Tidepool to investigate how insulin sensitivity and glucose levels relate to various stages of the menstrual cycle. They are also working on various algorithms to describe glucose-insulin regulation in type 1 diabetes. A pipeline for harmonising CGM data from different manufacturers and models was developed to enable joint analysis.

MARTINA ROTHENBÜHLER

Scientific Program Manager
Data Protection Officer

Data products and clinical data strategy
Clinical development / regulatory affairs
Data protection

ARITZ LIZOAIN

Statistician

Data analysis
Sample size estimation
SAP writing

Data Team

VINCENT BRAUNACK-MAYER
Senior Data Scientist

Data science and algorithm development

DOMINIQUE RUBI
Clinical Data Manager / Data Engineer

Creation of clinical research databases
Data management and engineering
REDCap maintenance / IT support

Data Infrastructure

The electronic data capture system REDCap (Research Electronic Data Capture) has been further expanded and DCB now has a secure, web-based EDC system in a cloud environment (PaaS). DCB uses REDCap to collect and manage data from various clinical research projects, surveys and medical registers. The major advantages of REDCap include its user-friendly interface, customisable data collection forms and surveys, and flexible data management functions.

DCB now has three different REDCap environments: the production environment (ongoing clinical studies and surveys), the testing environment (testing and implementation of new instruments such as interfaces with other software) and the registry environment (creation and maintenance of registry data).

As part of a routine audit, DCB's data infrastructure security was thoroughly assessed and tested by means of a penetration test in 2023. These measures ensure that DCB keeps all the data collections it holds safe and secure.

As of March 2024, DCB has worked on a total of 15 REDCap projects. Five of these were in preparation, seven were active and three have already been completed. Two thirds of these projects were clinical studies conducted directly at DCB. The remaining projects were conducted as part of external research projects.

Insulin Sensitivity and the Menstrual Cycle

DCB

Women can experience fluctuations in insulin sensitivity over the course of their menstrual cycle. This has implications for glycaemic control in women with type 1 diabetes (T1D). Although this phenomenon affects a large proportion of people with type 1 diabetes (T1D), a systematic analysis we carried out identified only ten studies investigating the effects of the menstrual cycle on glycaemic control parameters and diabetes management. These studies reported menstrual cycle-related changes in glycaemia in more than half of the women, with a significant increase in hyperglycaemia in the second phase of the menstrual cycle. Our meta-analysis confirms this. We observed a significant increase in glucose levels in the luteal phase compared to the rest of the cycle. These results suggest that insulin sensitivity and glucose levels change throughout the menstrual cycle, increasing the burden of T1D management in premenopausal women.

DCB has entered into a partnership with Tidepool in order to investigate this little-researched topic. The goal of this partnership is to collect data on glycaemic changes throughout the menstrual cycle using anonymised data from menstruating women with type 1 diabetes. Tidepool is a non-profit US organisation specialising in the development of open-source software for diabetes management. Their data platform enables people with diabetes to collect, analyse and share their health data to improve diabetes treatment.

Insulin Sensitivity and the Menstrual Cycle

This joint research project is focused on decentralised, anonymous data collection. Tidepool asks menstruating women who use the Tidepool data platform to provide their anonymised data. This data includes data that diabetes management devices such as insulin pumps, smart pens and continuous glucose monitoring (CGM) systems routinely collect. Participants are also asked to provide information about their menstrual cycles.

The main objective of this study is to investigate whether insulin requirements and glycaemic control parameters differ in the different phases of the menstrual cycle in women with T1D. A secondary objective is to investigate how women compensate for the differences in glycaemia resulting from the various phases of the menstrual cycle by administering insulin. We will assess whether there is a correlation between patterns of bolus and basal insulin administration and glycaemic control in the different phases of the menstrual cycle. Finally, we will evaluate whether we can categorise the study participants into groups according to glycaemic control throughout the menstrual cycle, and if so, how these groups differ in terms of socio-demographic characteristics.

The results of this study are expected in the third quarter of 2024.

Other Data Projects

CGM data harmonisation pipeline

The DCB team has developed a pipeline for harmonising CGM data from different manufacturers and models to enable joint analysis. In addition, the data team has worked on various statistical programs to model errors in continuous glucose monitoring systems. These models can be applied to various data sets to assess and validate the accuracy of CGM devices. They simulate realistic measurement errors that can occur in practical application scenarios and help to improve glucose monitoring algorithms. Applying these models allows better estimation of the reliability and precision of CGM systems.

Insulin sensitivity calculation models

The DCB data team is working on various algorithms to describe glucose-insulin regulation in type 1 diabetes. These algorithms use data from automated insulin dosing (AID) systems. They aim to improve the performance and personalisation of these systems. The algorithms also help clinical researchers understand key health parameters derived from available treatment data, such as insulin sensitivity, glucose effectiveness and basal insulin requirements.

Innovation & BD Team

OBJECTIVES / ACTIVITIES / PRIORITIES

Creation of a dynamic innovation and start-up environment

- Identifying trends, raising awareness and scouting in the field of diabetes technology worldwide
- Developing an international network of partnerships and a community
- Identifying unmet needs together with the community
- Providing ongoing support for start-ups by supplying expertise, services and funding
- Organising the annual Open Innovation Challenge, as well as events and summer schools

Innovation & BD Team

DCB

Our Innovation and Business Development team has evaluated over 200 ideas, proposals and applications. DCB has supported several dozen projects and start-ups by supplying expertise and access to our network, facilities and funding. The Open Innovation Challenge 2023 was successfully completed.

DEREK BRANDT
CEO

Strategy
Mentoring
Team support
Networking

GRETA EHLERS
Business Development

Business scouting and development
Collaboration with DVF
Start-up support and Innovation Challenge
Branding

MAREN SCHINZ
Innovation Manager

Innovation strategy development
Connecting start-ups, science and patients
Innovation Challenge and start-up support

Innovation & BD Team

DCB

HANNE BALLHAUSEN
Project Manager for Innovation

Portfolio and process management
Innovation Challenge and start-up support
Community management

SIMON SCHWAIGHOFER
Business Development

Supporting start-ups
Identification and selection of new innovations
Generating partnerships + business for DCB

EMA GRABENWEGER
Innovation Manager

Innovation projects
Events
Start-up support and team support

CORDELIA TRÜMPY
Innovation / communication

Partnership projects
Network and community
Sparring partner, mentoring

The DCB Innovation Ecosystem

DCB

DEVICES

DIATECH DIABETES

MYNERVA

fada medical

LAKKA HEALTH

GO-PEN

ECLYPIA

BOYDSense

GlucoSet INTENSIVE CARE MONITORING

Defymed.

Nimble

Votis

DIGITAL DIABETES

OneTwo Analytics

Balance Health

SPOTLIGHT AQ

UNA HEALTH

DiappyMed

SNAQ

enhance-d

Gluroo

Africa Diabetes Chat

Diabetotech

heyPatient

meala

TOM

escape your habit

smart start HEALTH

GlucoGear

Blue Circle Diabetes Foundation

TYPE1 FROM DAY 1

RESEARCH AND COMMUNITY

DIABETES TECHNOLOGY SOCIETY

JDRF IMPROVING LIVES. CURING TYPE 1 DIABETES.

beat diabetes

OPEN

TIDEPOOL

Swiss Diabetes Kids

#dedoc Diabetes Online Community

Glucose toujours

Innovation and Co-creation

DCB

We have continued developing our open innovation environment, expanding our collaboration with leading start-up hubs in Switzerland and Germany and creating a strong panel of experts.

Network ↗
Partnerships
Community

Identify unmet
needs
Co-creation

Expertise,
services,
funding

Proof of principle
Proof of concept
Investor readiness

Awareness ↗
Trending
Scouting

Deal flow ↗ ↗
Establish recurring
innovation process

INNOVATION CHALLENGE

PROJECT APPLICATION 365 days/year

INNOVATORS' CIRCLE / SCHOLARSHIPS

HYVE

DAYONE

IfDT Ulm

Peak Spirit GmbH

beat diabetes

ZID ZENTRUM FÜR INNOVATION UND DIGITALISIERUNG

klkks start

Swiss Institute for Translational and Entrepreneurial Medicine
sitem insel

Swiss Diabetes Venture Fund

Innovation Challenge '23

The DCB Open Innovation Challenge was once again a great success. There were 66 applications across two categories, which further expanded our vibrant diabetes tech community. The final six projects from the UK, France, South Africa, Ireland, the USA and Switzerland took part in a one-week boot camp in Switzerland. The boot camp culminated in the DCB Start-up Night and Awards Ceremony on 9 November in Berne, attended by around 300 guests. The jury selected the following two winners:

Greta Preatoni with MYNERVA (Switzerland, Diabetes Devices category): a wearable for people living with diabetic neuropathy. The device restores sensation in the extremities and relieves pain through non-invasive electrical nerve stimulation controlled by AI algorithms.

Katharine Barnard with Spotlight-AQ (UK, Digital Diabetes category): a novel, validated infographic assessment platform for routine medical visits that identifies users' primary concerns and the resources that can be directly allocated to meet these unmet needs.

DCB Start-Up Night

Diabetes Venture Fund (DVF)

The Diabetes Venture Fund brings together a unique constellation of partners to invest globally and with impact in exceptional start-ups across all areas of diabetes technology and related healthcare. This extends to areas such as chronic kidney disease, neuropathy, ophthalmics and wound care. The fund leverages the power, expertise and networks of Serpentine Ventures, the investment arm of the Swiss Ventures Group, and the DCB. This enables the DVF to give our portfolio companies unique support on their journey to success, in ways that few other investors can.
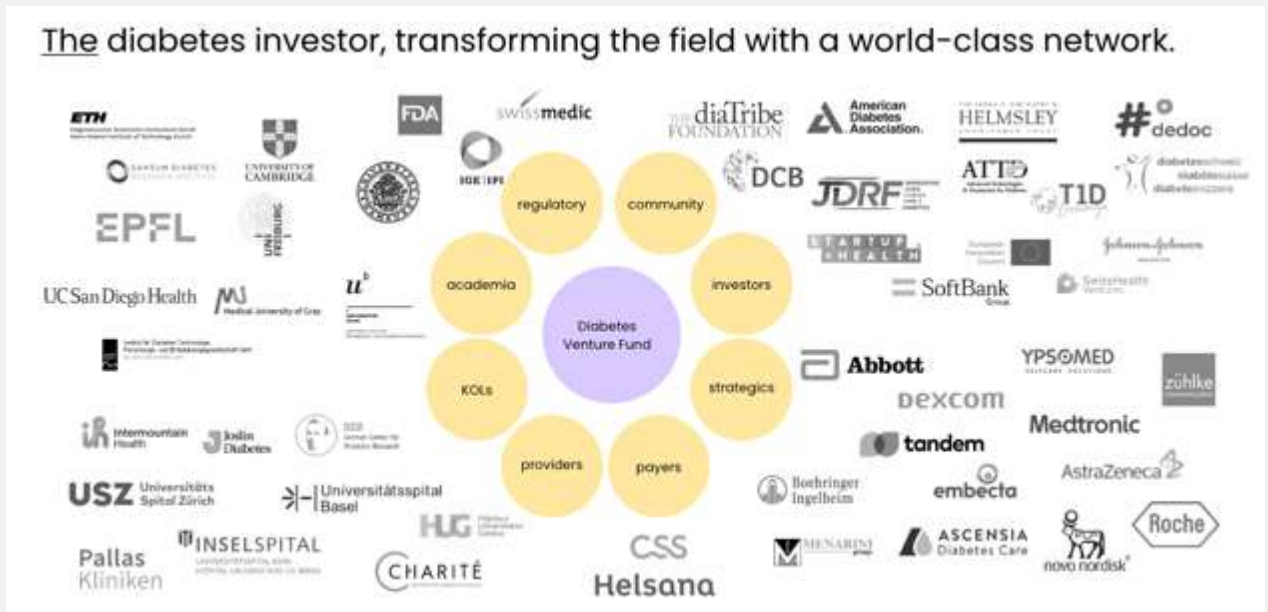
A strong team with extensive experience investing in early stage healthcare, led by Investment Director Craig Cooper, is complemented by Investment Committee members Simon Michel, Derek Brandt, Michael Stucky and Mike Baur, who independently assess all investment proposals.

For the latest information about the investments, please visit: https://diabetesfund.vc/

DVF Investments

GlucoSet INTENSIVE CARE MONITORING

GlucoSet's intensive care monitoring solutions help hospitals minimise complications and costs. Their intravascular, hydrogel-based continuous glucose monitor continuously provides accurate glucose level information, making continuous glucose monitoring a reality on the ICU.

OneTwo Analytics

Healthcare professionals are often overwhelmed by the amount of data that CGM generates. OneTwo Analytics is helping relieve this burden with its AI-powered decision support tool for patient prioritisation and treatment. It transforms data into improved outcomes and quality of life and reduces costs for healthcare providers.

piomic

As populations age and diabetes becomes more prevalent, healthcare systems are increasingly struggling to cope with the problem of hard-to-heal wounds. To address this challenge, Piomic Medical has developed the COMS One therapy system, which promotes wound healing in chronic leg and foot ulcers.

DVF Investments

Luna Health is aiming to address a major unmet need – automatic overnight glucose control for people who use insulin pens. They call it "AI", which stands for "Automated Injections". It's a way to combine the convenience of insulin pens with the improved clinical outcomes of automated insulin delivery.

SUPERSAPIENS

Supersapiens is a sports performance brand that focuses on energy management systems designed to help athletes run faster for longer. Combined with the Libre Sense Glucose Sport biosensor from Abbott, Supersapiens provides informative data on the body's fuel reserves through continuous glucose measurement.

 SNAQ

SNAQ's diabetes platform helps patients and healthcare professionals make data-driven decisions about meals. Over 75,000 customers are already using their clinically validated and patented carbohydrate counting technology, which works through image analysis.

Lived Experience Panel

DCB

How can we find out what people with diabetes really need? By involving them, of course. This is precisely why we created the DCB Lived Experience Panel. We want to ensure that the ideas we help to develop are truly person-centred by working closely with the diabetes community. Prior to 2023, the panel was called the "Patient Leader Programme", but in 2023, it was renamed the "Lived Experience Panel" in accordance with #languagematters guidelines, putting the emphasis on lived experience.
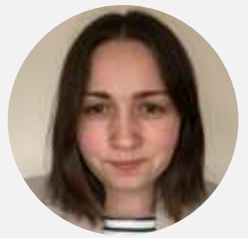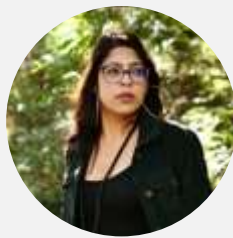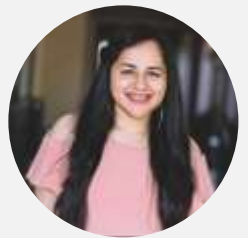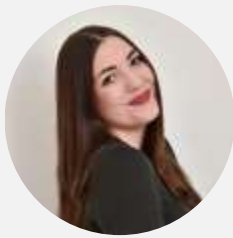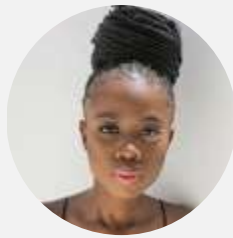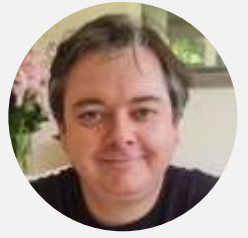
Clinical Team

OBJECTIVES / ACTIVITIES / PRIORITIES

Conducting clinical trials to support start-ups and research partners in evaluating the performance and safety of their ideas and products.

- Running studies all the way from the development of the study design to the final report
- Contributing to studies with specific knowledge in the areas of monitoring, data management, study management and statistics
- Simplifying and improving the efficiency of clinical trial processes with regard to regulatory procedures and trial execution
- Advising partners on regulatory issues relating to clinical evaluation strategy

Clinical Team

The clinical team has successfully completed one study and has opened another for recruitment. In the last year, two pilot studies were conducted in collaboration with the Department of Diabetes, Endocrinology, Clinical Nutrition and Metabolism, Bern University Hospital, University of Bern (UDEM) in Bern, Switzerland. Both studies test a non-invasive glucose measurement system. One has 10 participants and the other has 20. The role of DCB is that of a clinical research organisation for one study and study sponsor for the other. The results of the study the clinical team is currently recruiting for are expected in the third quarter of 2024. The team has also begun preparations for two further clinical trials. One of these studies will once again test a non-invasive glucose monitoring device. This time in 15 participants with four visits each. The second study will investigate an invasive measuring device that will be tested in humans for the first time in the third and fourth quarters of the year.

MARIE-ALINE GÉRARD
Clinical Research Scientist

Clinical project management
Quality management

STEFANIE HOSSMANN
Clinical Research Scientist

Clinical research management
Regulatory affairs

Clinical Team

REGULA SCHNEIDER
Clinical Research Associate

Monitoring of clinical trials
Enforcing of clinical trial guidelines and
regulations
Supporting clinical trial set-up
Collaborating with and supporting sites

CONSTANCE BISCHOFF
Clinical Research Associate

Monitoring / enforcing clinical trial guidelines and
regulations / clinical trial set-up support
Collaborating with and supporting sites
Contributing clinical experience

MARTINA ROTHENBÜHLER
Scientific Program Manager
Data Protection Officer

Data products and clinical data strategy
Clinical development / regulatory affairs
Data protection

FibreGum Study

Around one in six children in Switzerland is affected by overweight or obesity, and the prevalence continues to rise. This increase in obesity and the associated co-morbidities is an enormous socio-economic challenge because it results in increased morbidity and mortality. Obesity is not only a chronic disease, but also one of the main risk factors for the most common causes of deteriorating health and early death worldwide – namely cardiovascular disease, various types of cancer, type 2 diabetes and osteoarthritis.

Preventing obesity in children and adolescents is a unique opportunity to prevent them from heading down the path to an unhealthy adult life. A «low-hanging fruit» solution could be the key to success here. This is why we have helped Delica AG develop a fibre-enriched chewing gum, called «FibreGum». The idea behind FibreGum is to increase microbial diversity and promote the production of useful metabolic products while simultaneously helping to reduce snacking. To investigate the effectiveness of this chewing gum, a randomised, placebo-controlled clinical trial is being conducted with a cohort of 105 children and adolescents with obesity.

Project status
The study was approved by the Cantonal Ethics Committee of Bern on 18 November 2022. The first participant was included on 9 January 2023 and so far, 43 children/adolescents have taken part in the study. The results of this study are expected at the end of 2025.

FibreGum Study
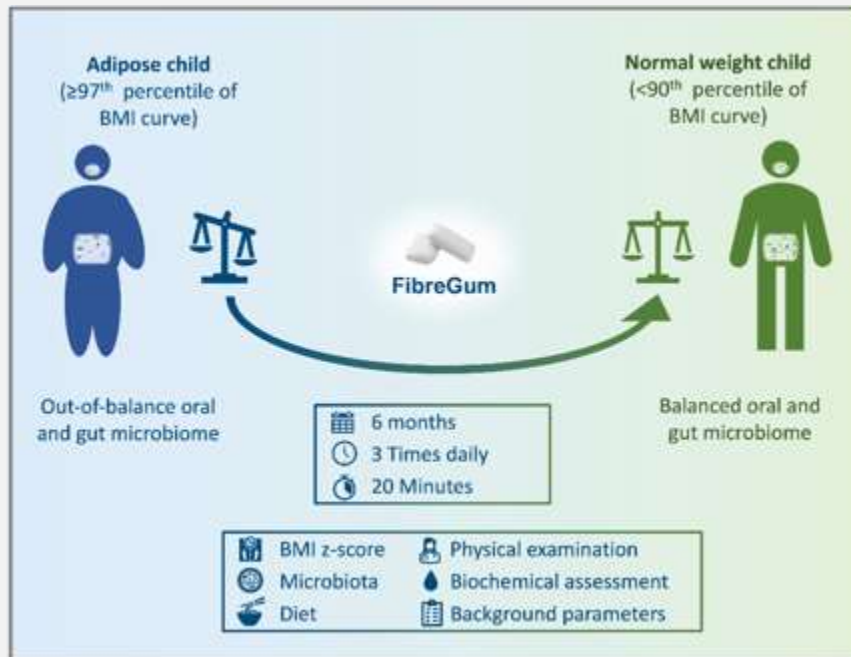
Project team
Prof. Maria Luisa Balmer, Inselspital (University Hospital of Bern) and University of Bern (Project Leader); Dr Christoph Saner, Children's Hospital, Inselspital (University Hospital of Bern); Dr Marco Janner, Children's Hospital, Inselspital (University Hospital of Bern); Prof. Dominik Meinel, FHNW University of Applied Sciences and Arts Northwestern Switzerland; Dr Alexandra Stähli, zmk bern – School of Dental Medicine (University of Bern); Valentina Huwiler, Inselspital (University Hospital of Bern) and University of Basel; Marie-Aline Gérard, Diabetes Center Berne

Project funding
Diabetes Center Berne (research project), Von Tobel Stiftung (research project), Walter Fuchs Stiftung (research project), Swiss National Science Foundation (SNF)

The VAARA Study

Background

Regular blood glucose measurements are a part of daily life and a major burden for people living with diabetes. New blood glucose measurement technologies can help reduce the burden that invasive methods of glucose monitoring cause. One possible solution could be to use detection of disease-specific or metabolism-specific chemical signatures from volatile organic compounds (VOCs) as a way of recognising a drop in blood glucose levels. Currently, little is known about the relationship between specific VOCs and the glucose metabolism, or about the potential of such technologies. Detecting low VOC concentrations requires sensors that are both sensitive and selective. Chemiresistive sensors such as metal oxide semiconductor sensors are already being used in clinical applications and they show great promise for the detection of low-concentration VOCs. The sensor we are investigating in the VAARA study changes its resistance properties when it interacts physically or chemically with VOCs or other environmental gases. We are analysing the device's measurements to detect VOC changes associated with changes in blood glucose levels.

The study

The Sokru device is a prototype at present. It has been tested in 10 participants who underwent a trial procedure twice. During a study procedure, the blood glucose (BG) of volunteers living with type 1 diabetes was lowered to a hypoglycaemic state by injecting insulin. The main objective of this clinical study is to determine the VOC signal markers detected by the Sokru device that are associated with a reduction in blood glucose levels and hypoglycaemia.

The VAARA Study

Study status

The last study visit was carried out on 16 June 2023. The collected data was then analysed and the study report was sent to the authorities. The study is therefore complete.

DCB's role

As study sponsor, we were responsible for the entire clinical process, from creating the clinical study plan to submitting the authorisation to the ethics committee, providing the materials, monitoring the site, cleaning and analysing the data and preparing the study report.
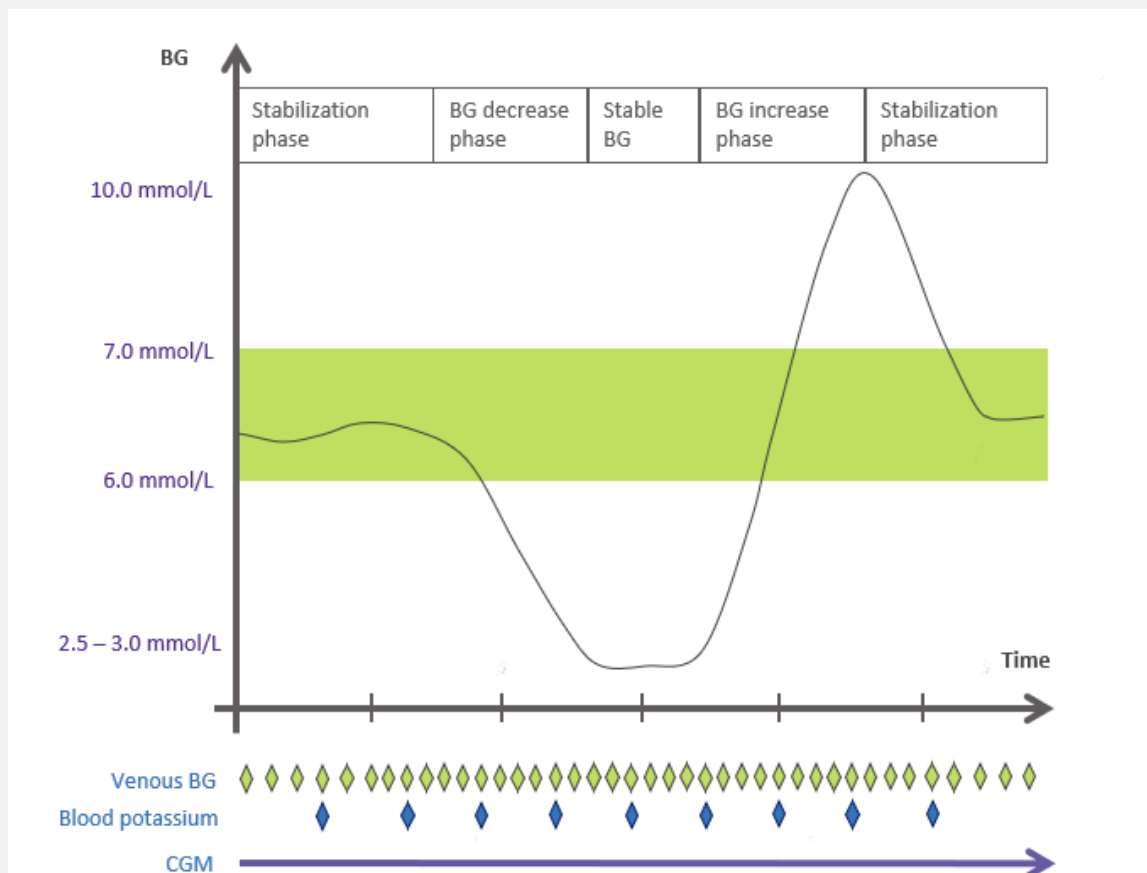
Other Clinical Projects

Definition of clinical processes

The Clinical Team has continued to develop and improve standard operating procedures (SOPs) for clinical activities. This ensures consistency and compliance with Good Clinical Practice / ISO 14155 / ISO 20916 and maintains the high quality of research conducted and/or supported by DCB.

Clinical trial advice

The Clinical Team was available to support and advise the Innovation Challenge start-ups on how to plan their clinical trials and how to carry out the clinical evaluation of their medical devices. The start-ups made good use of this opportunity and received comprehensive advice on how to conduct studies in accordance with the principles of good clinical practice as well as on how to identify the best study designs to demonstrate the effectiveness of their medical devices.

Advice on regulatory issues

The Clinical Team supported various start-ups and partners (including academic partners) with regulatory issues relating to market authorisation and the marketing of medical devices.

Communication

OBJECTIVES / ACTIVITIES / PRIORITIES

Communications support for DCB activities and positioning of the organisation, covering everything from the basic conceptual strategy to actual implementation across various communication channels, all tailored to DCB's various target audiences.

- Responsibility for the DCB communications strategy, as well as its continuous adaptation and implementation via DCB communication channels and stakeholders
- Ensuring DCB's corporate design, corporate identity and tone of voice remain consistent
- Providing up-to-date information on DCB activities and on developments in diabetes and diabetes technology via the various communication channels
- Ensuring clear and consistent communication across all channels

Communication Team

DCB is always working to expand its communications presence. This includes elements such as the website, social media channels such as LinkedIn and Instagram, as well as PR activities in media such as the D-Journal, Sonntagszeitung, Nature and Medinside. DCB also had a rewarding collaboration with the President of the Swiss Confederation, Viola Amherd, as part of the "Tag der Kranken"

SUNJOY MATHIEU
Communications Manager

Corporate communications
Communications strategy
Media relations and PR
Content strategy (website, newsletter etc.)
Project management

SVEA KRUTISCH
Digital Communications Specialist

Digital communications and marketing
Social media a community management
Content strategy (website, newsletter etc.)
Lived Experience Strategy and PPI

GRETA EHLERS
Business Development

Business scouting and development
Collaboration with DVF
Start-up support and Innovation Challenge
Branding

"Day of the Sick"

Tag der Kranken

Suche nach Lösungen in Gesundheitsbranche laut Amherd spürbar

« Es ist eine schöne Tradition, ass viele Menschen an diesem Tag ewusst da sind für jene, denen es cht so gut geht. »

iola Amherd undespräsidentin

g der Kranken März 2024

Bundespräsidentin Viola Amherd zum Tag der Kranken.
Keystone

Bundespräsidentin Viola Amherd hat sich zuversichtlich gezeigt, dass die Probleme in der Gesundheitsbranche angepackt und Lösungen gesucht werden. Das sagte sie bei einem Besuch im Diabetes Center Berne anlässlich des Tages der Kranken vom Sonntag.

On the occasion of the 85th "Day of the Sick" (Swiss Disease Awareness Day) on 3 March 2024, DCB hosted a speech by Viola Amherd, President of the Swiss Confederation. This contributed to a strong media presence for DCB.

Tag der Kranken – Ansprache der Bundespräsidentin Viola Amherd
youtube.com

DCB

FACHBEITRAG

Diabetes Center Berne: Innovative Strategien zur Prävention und Therapie

Das 2017 gegründete Diabetes Center Berne (DCB) will das Leben von Menschen mit Diabetes erleichtern – mit der Förderung von Innovation und Forschung im Bereich Diabetestechnologie.

Welche Zusammenhänge bestehen zwischen dem menschlichen Stoffwechsel, der Darmflora und dem Immunsystem? Und wie tragen diese Faktoren zur Entstehung von starkem Übergewicht und Diabetes bei? Diesen Fragen geht Maria Balmer, Assistenzprofessorin und Forschungsgruppenleiterin an der Universität Bern und dem Inselspital, in ihrer Forschung mit dem Schwerpunkt «Stoffwechsel der Immunabwehr» nach.

In einer ihrer aktuellen Studien, in Zusammenarbeit mit dem Diabetes Center Berne (DCB), geht es genau um diese Fragestellungen. Dabei steht die zunehmende Anzahl von übergewichtigen und adipösen Kindern im Mittelpunkt, wovon in der Schweiz bereits jedes sechste Kind betroffen ist. Dies stellt eine enorme Belastung für den Gesundheitszustand der Betroffenen dar und gilt als einer der Hauptrisikofaktoren für Herzkreis-Kreislauf-Krankheiten, Diabetes, Krebs und Arthrose im Erwachsenenalter.

Die Fibregum Studie

IDEEN ZUM DURCHBRUCH VERHELFEN

AWARD MIT INTERNATIONALER AUSSTRAHLUNG

INNOVATIVE PROJEKTIDEEN GESUCHT
Wollen Sie ein Projekt an der Open Innovation Challenge einreichen, das einen Unterschied für Menschen mit Diabetes macht? Dann teilen Sie diese mit dem Diabetes Center Berne (DCB) und nehmen Sie Kontakt auf.

Maria Balmer
Assistenzprofessorin und Forschungsgruppenleiterin
Universität Bern
Translational Immunometabolism-Lab
Department of Biomedical Research (DBMR)
Department of Diabetes, Endocrinology, Clinical Nutrition and Metabolism (UDEM)
Diabetes Center Berne (DCB)
University and University Hospital Bern

KONTAKT
DCB Research AG
Freiburgstrasse 3 · 3010 Bern
E meder@dcberne.com
www.dcberne.com

DCB

Technologische Innovation für mehr Lebensqualität

Das 2017 gegründete Diabetes Center Berne (DCB) widmet sich ganz dem Thema Diabetestechnologie und damit verbundener Forschung und Förderung von Projekten, die das Leben von Menschen mit Diabetes verbessern. Situiert auf dem Campus des Inselspitals in Bern, ist die unabhängige Stiftung mittlerweile zu einem Innovationszentrum mit internationaler Ausstrahlung geworden.

Unterstützung ab Tag 1

Mit einem Kangamed Übergewicht bei Kindern reduzieren

Von der Nahrungsaufnahme und Bewegung zum aktuellen Glukosewert

Die Zulassung ist für die weitere Nutzung der App erforderlich, um damit auch in Zukunft mehr Menschen mit Diabetes eine passende App-Lösung bieten zu können, sowohl in Europa als auch in den USA.

Innovative Projektideen gesucht

Wollen Sie ein Projekt an der Open Innovation Challenge einreichen, das einen Unterschied für Menschen mit Diabetes macht?

Media Impressions

MEDINSIDE

Bern: Neue Professur für Diabetes-Technologie & KI

Lisa Koch will dabei insbesondere Data-Science-Tools für Behandlungssysteme in der Diabetesversorgung entwickeln. Die Professur ist eine Kooperation von Uni Bern, Insel Gruppe und Diabetes Center Bern.

rap. 2. April 2024 um 09:05

Die Uni Bern, die Insel Gruppe und das Diabetes Center Bern schaffen gemeinsam eine neue Assistenzprofessur im Bereich «Diabetestechnologie und künstliche Bauchspeicheldrüse». Ein Schwerpunkt liegt dabei auf dem Einsatz von Künstlicher Intelligenz für Behandlungssysteme.

Die Professur übernimmt Lisa Koch. Sie verfügt über einen Hintergrund in der akademischen Forschung wie auch in der Entwicklung von datenwissenschaftlichen Produkten für medizinische Geräte: Nach einem Bachelor-Abschluss in Elektrotechnik und Biomedizintechnik an der ETH Zürich promovierte Lisa Koch am Imperial College London im Bereich maschinelles Lernen für die medizinische Bildanalyse. Es folgte ein Postdoc-Aufenthalt an der ETH, dann wechselte Lisa Koch zum Schweizer Startup Ava, wo sie schliesslich die Leitung des Data-Science-Teams übernahm.

2021 kehrte Lisa Koch in die akademische Forschung zurück – als Gruppenleiterin für Machine Learning in der Diagnostik am Hertie-Institut für AI in der Hirnforschung an der Universität Tübingen, Deutschland. Als Assistenzprofessorin an der Universität Bern will sie daran arbeiten, zuverlässige und effektive Data-Science-Tools für Behandlungssysteme in der Diabetesversorgung zu entwickeln.

«Neben Lilian Witthauer, Professorin im Bereich Sensortechnologie, und José Garcia Tirado, Professor für technologiegestützte Präzisionsmedizin, haben wir mit Professor Koch einen dritten und wichtigen Schritt für das Thema Artificial Intelligence und Data Science in der Diabetesversorgung gemacht», sagt Derek Brandt, CEO des Diabetes Center Bern: «Damit können wir unsere internationale Vorreiterrolle auf dem Gebiet der translationalen Diabetes-Technologieforschung weiter stärken.»

ADA Promotional Film

A short film about the mission of the DCB was shown at the 83rd Scientific Meeting of the American Diabetes Association in the convention centre and the adjacent areas and is still available online.

Newsletter

The DCB LinkedIn newsletter continues to be published regularly and has almost 2,000 subscribers as of April 2024. The newsletter is published every three weeks both on LinkedIn and on the website. It provides information on current topics in diabetes research and technology and on DCB's activities.

Social Media Impressions

Operations Team

OBJECTIVES / ACTIVITIES / PRIORITIES

Finances / HR
Implementing the strategy and business plan and ensuring that accounting and financial reporting comply with the applicable laws and regulations.

Buildings and laboratory management / EHS
Ensuring the smooth operation of the DCB facilities and equipment, safeguarding health and safety and providing project implementation services.

Quality management
Ensuring compliance with the requirements of ISO 9001 and supporting effective and efficient work processes.

Operations Team

LORENZ BURKHALTER
CFO / COO

Finance
HR
Operations

CORINNE NYDEGGER
Finance / Operations Assistant

Finance assistance
Facility management
Safety Officer

IVONA WEINAUG
HR Specialist

Research

Associated research groups:

- **samlab** (Sensing and Monitoring Lab) led by Professor Lilian Witthauer

- **PrecisionLab** led by Professor José Garcia-Tirado

- **TrimLab** led by Professor Maria Louisa Balmer

- **Machine Learning in Medicine lab** led by Professor Lisa Koch

samlab

PROF. DR. PHIL. LILIAN WITTHAUER
Tenure Track Professor

CAMILO MENDEZ SCHNEIDER
PhD Student

CLEO NICOLIER
Research Associate

MAHSA NASEHI
PhD Student

samlab

ANNINA BURGHERR
Doctoral Student

The core of personalised healthcare is the ability to accurately assess a person's state of health and track the course of their illness. samlab's aim is to improve sensor technologies to improve the diagnosis and treatment of diseases, with a focus on diabetes. Their research includes the development of instantaneous glucose sensing technology, as well as intelligent algorithms for existing sensors, with the aim of creating an artificial pancreas and improving patient-specific diagnoses and treatments. They are also investigating the measurement of other parameters such as heart rate, movement, hormones, ketone bodies and lactate.

samlab

The Moonwalk project: Investigating the relationship between glucose values and sleep pattern

The first project to be successfully initiated was the Moonwalk pilot study. This study is investigating the connection between blood glucose levels and hypoglycaemia symptoms during sleep.

The Desire Project: Developing a delay-free glucose sensing technology

Another project is focusing on the development of a sensor that continuously and instantaneously measures the glucose level in the blood. Instantaneous measurement is of particular interest when blood glucose levels change rapidly, such as during meals, exercise or times of stress. The glucose sensor uses a light-based measuring method. It uses the physical properties of the glucose molecule to detect it

samlab
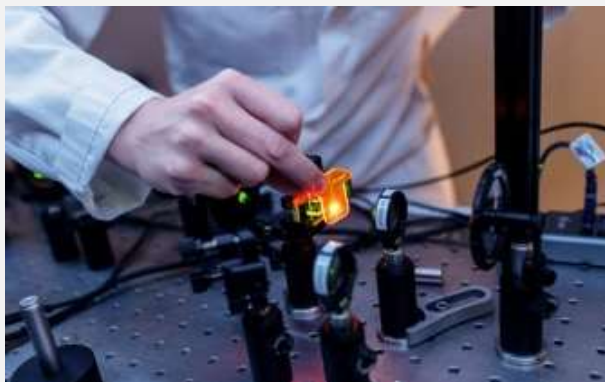
Volatile organic compounds in individuals and breath analysis in individuals with diabetes

The main goal of this research area is to identify distinctive patterns of Volatile Organic Compounds (VOCs)s in breath and their dependence on blood glucose values in individuals with diabetes. VOCs are emitted by the human body, among which breath is the most important carrier. The breath contains a diverse array of VOCs that offer valuable insights into the body's metabolic activities, including the glucose metabolism.

PrecisionLab
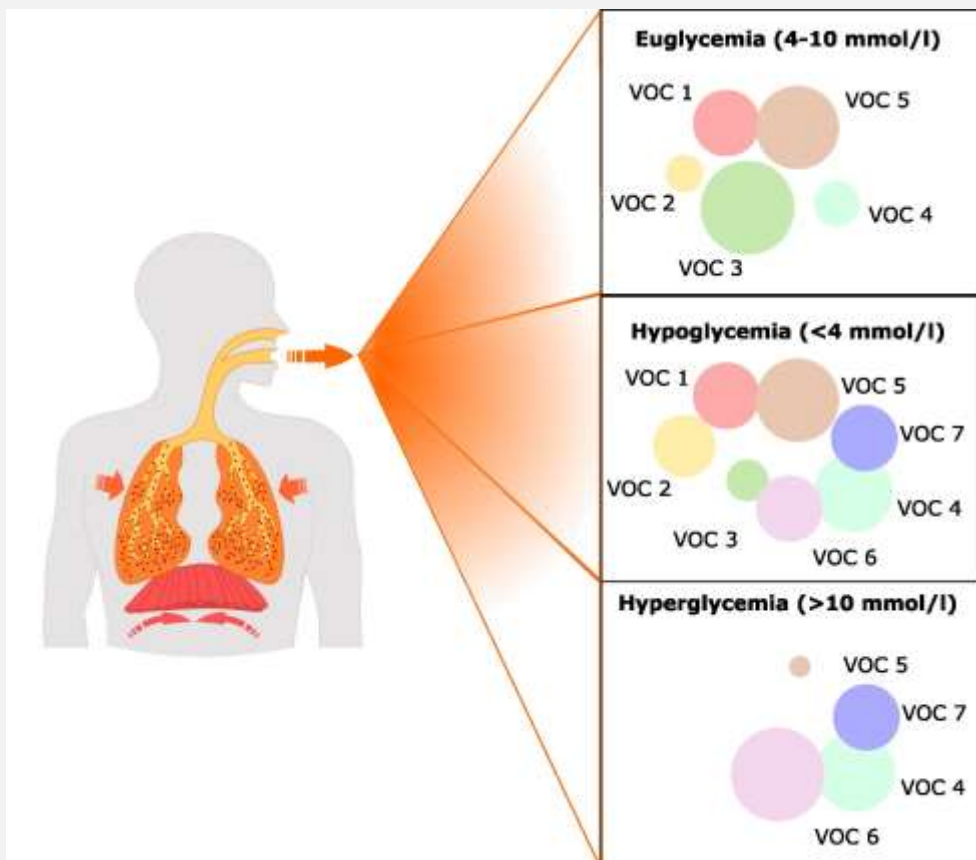
PROF. DR. JOSÉ GARCIA-TIRADO
Tenure Track Professor

MARIA CAROLINA FRAGOZO-RAMOS
PhD Student GCB

CLARA ESCORIHUELA ALTABA
PhD Student

DR. VIHANGKUMAR NAIK
Postdoc

PrecisionLab

ELEONORA MANZONI
Postdoctoral Fellow

PABLO RODRIGUEZ
Master's Student

GABRIEL BUNSELMEYER
Software Developer

CEREN ASLI KAYKAYOGLU
PhD Student

PrecisionLab

This research group focuses on developing new tools and algorithms to drive the advancement towards future precision therapies for people with diabetes and related metabolic diseases. They combine methods from control systems engineering, mathematical modelling and computer science. They have two main objectives:

- To develop, test and introduce the next generation of fully automated insulin delivery systems (fAID) – also known as an artificial pancreas – for use in insulin-dependent people with diabetes with and without additional non-insulin therapies.

- To develop, test and implement decision support systems (DSS) for people on either multiple daily injections (MDI) or sensor-augmented pumps (SAP), with or without additional non-insulin blood glucose-lowering medications.

PrecisionLab

Research focus 1

Maximum (simulation) model for glucose homeostasis – at individual and population level:

- Type 1 diabetes
- Pre-diabetes and type 2 diabetes
- Obesity

Research focus 2

Fully automated insulin delivery (fAID) for people with diabetes who require insulin:

- Personalised design of control systems (model predictive control)
- Cloud computing for model updating (daily variations) and pattern recognition based on artificial intelligence
- Informed combination of SGLT2i and fAID systems

TrimLab

PROF. DR. MARIA LUISA BALMER
SNSF Eccellenza Professor, Group Leader

MELANIE SCALISE
PhD Student

VALENTINA HUWILER
PhD Student

KRISTYNA FILIPOVA
Laboratory Technician

TrimLab

ANDREA CELORIA
PhD Student

JUNE STONE
PhD Student

GABRIELA KIRSCH
PhD Student

NATACHA SCHEIDEGGER
Master's Student

TrimLab

TABEA WALTENSPÜL
Master's Student

The TrimLab (Translational Immunometabolism Lab) headed by Prof. Dr. Maria Luisa Balmer is investigating how intestinal microbiota influences the development of obesity and associated metabolic diseases. The aim is to understand which bacteria in the gut are beneficial and which contribute to the development of obesity and complications.

The research team is striving to better understand the mechanistic relationships between intestinal microbiota and the development of obesity to find new approaches for prevention and therapy. The TrimLab is therefore currently working on a number of projects, ranging from animal experiments to clinical studies. The FibreGum project (see p. 33f.) includes a clinical study with children and adolescents with obesity. A special chewing gum containing fibre is being tested, which is intended to have a positive influence on the composition of the intestinal microbiota and thus support children in losing weight in a low-threshold way.

Machine Learning in Medicine Lab

DCB

PROF. DR. LISA KOCH
Tenure Track Professor

ALCEU BISSOTO
Postdoctoral Researcher

The objective of the Machine Learning in Medicine Lab is to develop certified safe, reliable and effective data science tools to improve diabetes care. It also focuses on developing trustworthy artificial intelligence methods for analysing biomedical data, including data from wearables and biomedical imaging.

Quality

DCB is ISO 9001 certified

Diabetes Center Berne (DCB) has been ISO 9001 certified since August 2022. The certification is valid until August 2025 and has been maintained following two successful audits in May 2023 and April 2024, during which no objections were identified.

Quality management system

Since April 2022, DCB has had a flexible, process-oriented and electronic management system (EMS) in place, in accordance with ISO 9001:2015. This covers not only the general quality processes but also the core clinical processes based on ICH-GCP. This means that various functions such as the review/approval process can be carried out electronically, making training processes easier to plan and improving employees' level of expertise.

A Glimpse of the Future

At DCB, we work towards our long-term goals within the framework of our vision. Only if we manage to get the many initiatives and projects we are involved with off the ground and onto the market can we add value for those affected by diabetes through diabetes technologies. Here's what we're doing to achieve that:

The DCB Innovation Challenge is poised to become one of the world's most prestigious diabetes technology awards. Over the next few years, we will continue to run the Challenge and further optimise it. This will enable us to support many more innovators and start-ups to bring their products and solutions to market and thereby have a positive effect on the lives of people with diabetes.

Conducting clinical trials is the cornerstone of our translational research work. Our goal is to "translate" technologies into solutions that add value for people with diabetes by helping guide them through development and onwards to market launch. This "translation" is also supported by efficient clinical studies from the research and idea phase. We will therefore continue to work hard in this area to further expand our expertise and our international network.

The blue circle is the universal symbol for diabetes. It was introduced in 2006 as a common symbol to rally around in the fight against diabetes. The purpose of the symbol is to:

- Support efforts to raise diabetes awareness

- Make the general public aware of diabetes

- Provide a way to show support for the fight against diabetes

Publisher
DCB Research AG

Text
DCB Research AG

Concept and design
DCB Research AG

This annual report was published in German and English.