A novel implantable sensor for long-term continuous glucose measurement

Investor Presentation
at

Carnegie

November 29th - 2019

Lifecare

Lifecare AS is developing an implantable glucose sensor named SENCELL for positioning under the skin into the interstitial space.

Lifecare

Lifecare Management Team

Rune Frisvold
COO

- Managing Director of Lifecare since 2012
- Previously held senior management, operational and director positions in leading enterprises
- Managed and participated in major national and international companies and projects
- MBA / USA

Prof. Andreas Pfützner
CSO

- Managing director of Pfützner Health & Science Institute, Diabetes Center and Practice
- CEO of ikfe GmbH Mainz Germany
- Prof. of Applied Clinical Research
- 25 years of pharmaceutical and device development experiene

Dr. Frank Flacke
VP R&D

- Previously global Medical Director Devices in the diabetes division at Sanofi
- Held management positions in several biotech and technology companies
- Over 20 years of experience in the pharma and medtech business

Dr. Sanja Ramljak
Scientific Project Manager

- Former Director, Research Laboratory of IFKE
- Post Doc at German Primate Centre
- PhD in Molecular Biology, University of Göttingen
- Specialized in clinical and lab studies for the assessment of the accuracy of blood glucose meters

Dr. Konstantin Kloppstech
VP Technology

- CEO of DEVmedical UG, Oldenburg Germany
- Head of Technology for MEMS/NEMS Sensor Development for Medical and Industrial Sensor Solutions 2016-2019
- PhD at the Department of Physics in Sensor Development for Fundamental Research at University of Oldenburg, 2011-2015

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Scientific Advisory Board

Prof. David C. Klonoff
Chairman, Scientific Advisory Board

- Clinical professor of Medicine, UCSF
- Editor-in-chief, DST
- Medical Director, INST
- Chairman, i.a. DTM and ADA
- Chaired i.e. FDA, NASA, US army, NIH, NSF
- Consulting i.e. Sanofi, Google and Insulin

Prof. Lutz. Heinemann
Member, Scientific Advisory Board

- Partner and Scientific Consultant, Profil
- Co-editor, DST
- Published 160 research articles
- Awarded ”Leadership in Diabetes Technology”
- Charing the EU founded project ”AP at home”

Prof. Kåre Birkeland
CMO, Scientific Advisory Board

- Professor of Internal Medicine and Endocrinology, University of Oslo
- Senior consultant in Endocrinology, Dep. of Transplantation Medicine, Rikshospitalet, Oslo University Hospital
- Chairman Advisory Board, Norwegian Diabetes Association

Board

Christian Saure
Chairman of the board

Christian Hysing-Dahl
Board member

Joacim Holter
Board member

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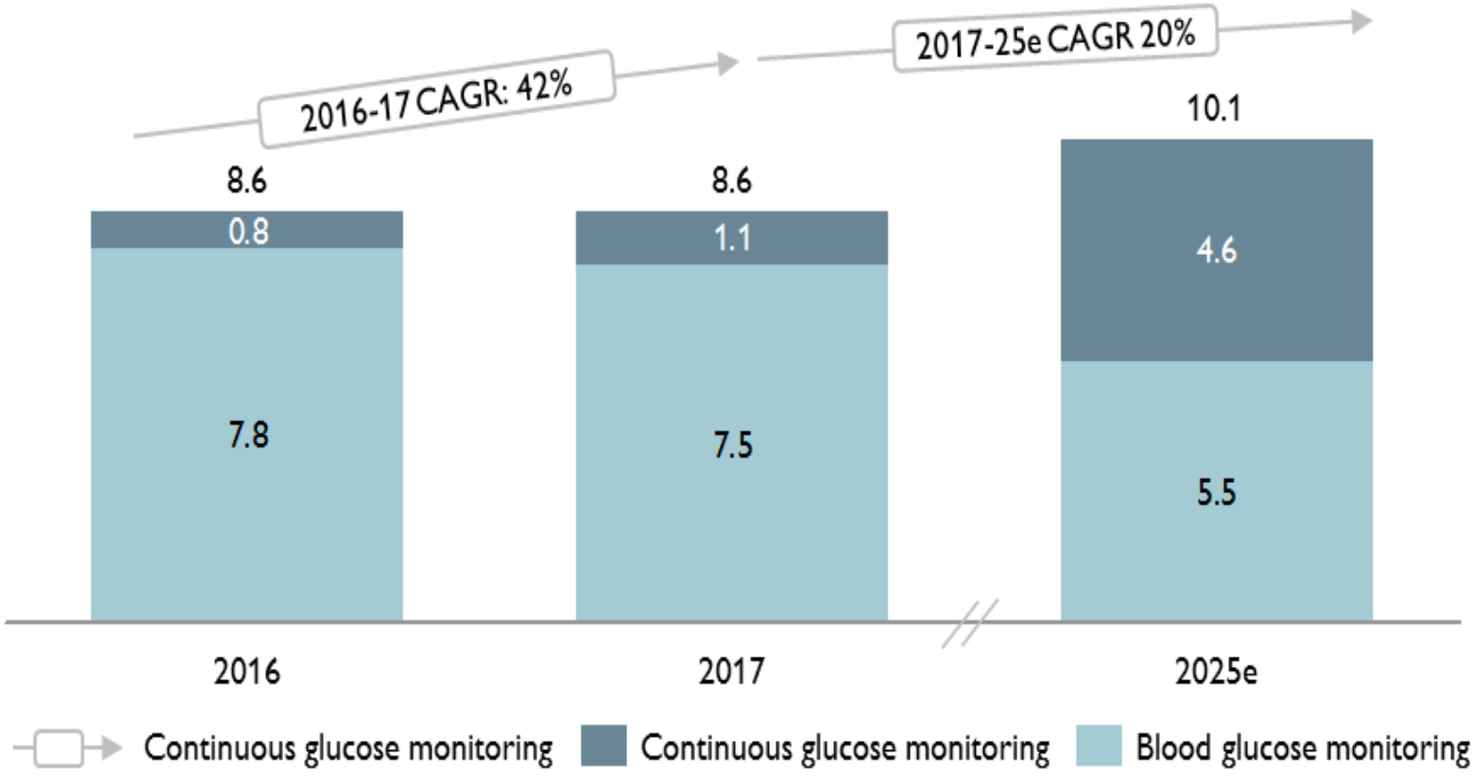
BGM versus CGM



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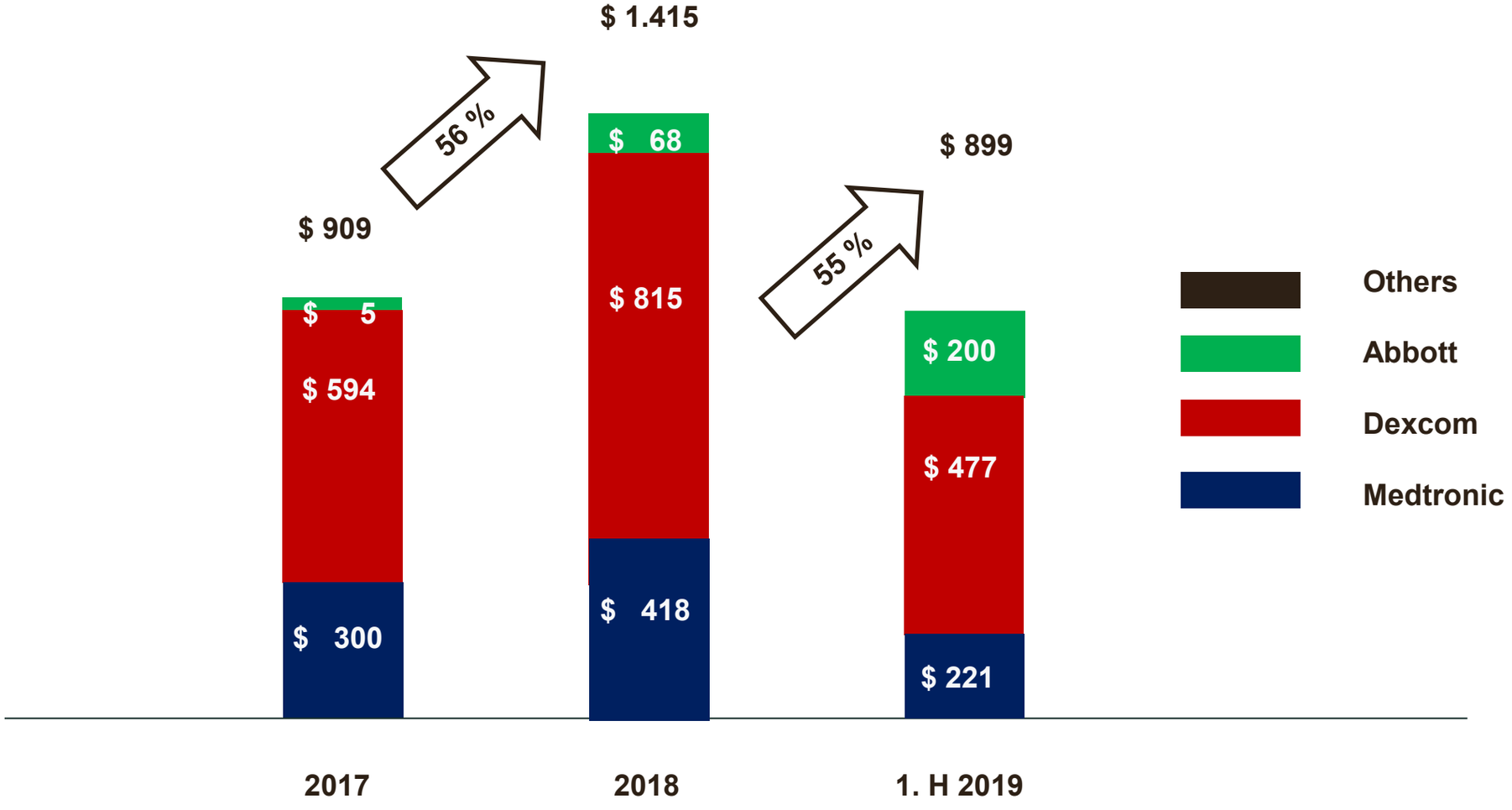
CGM - sales in M$



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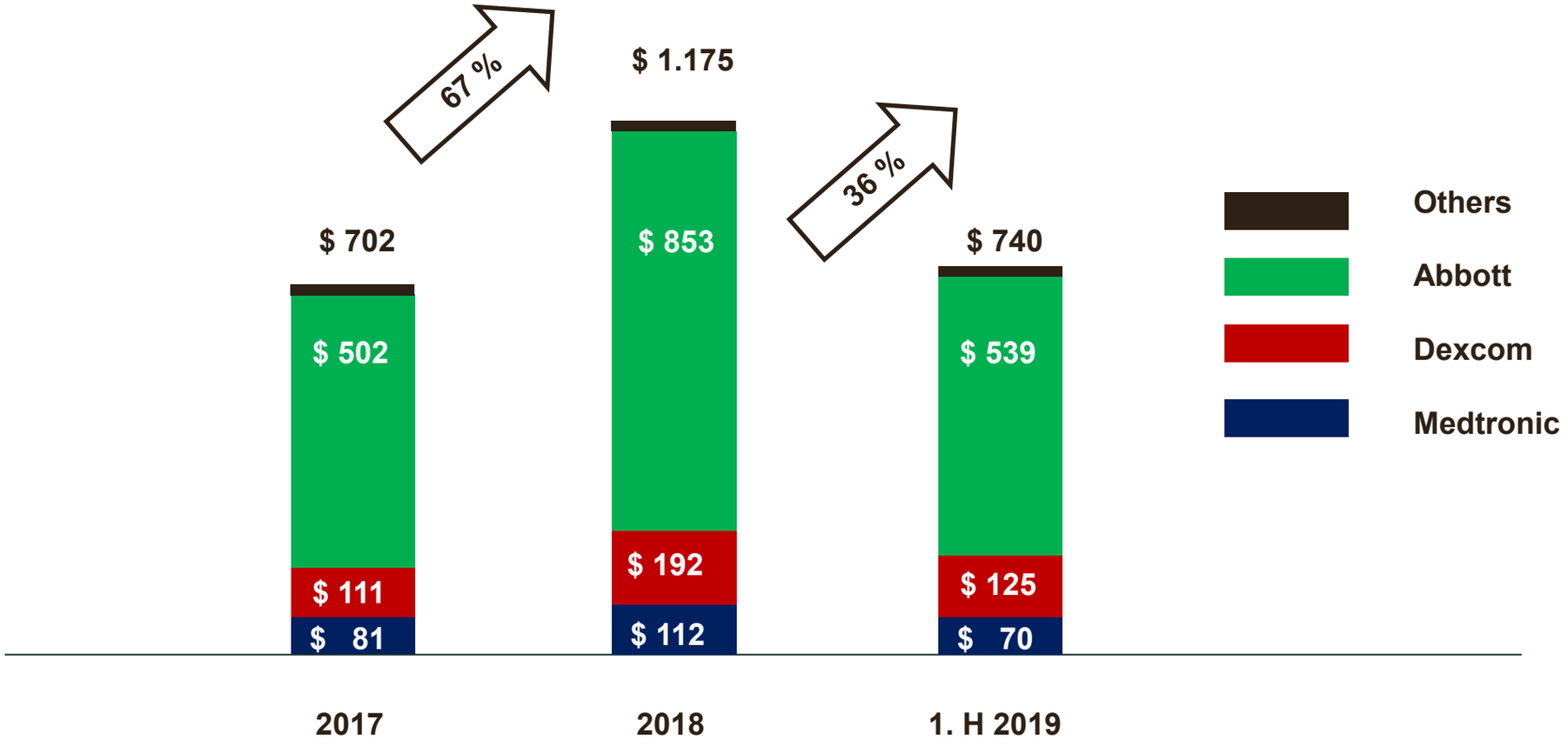
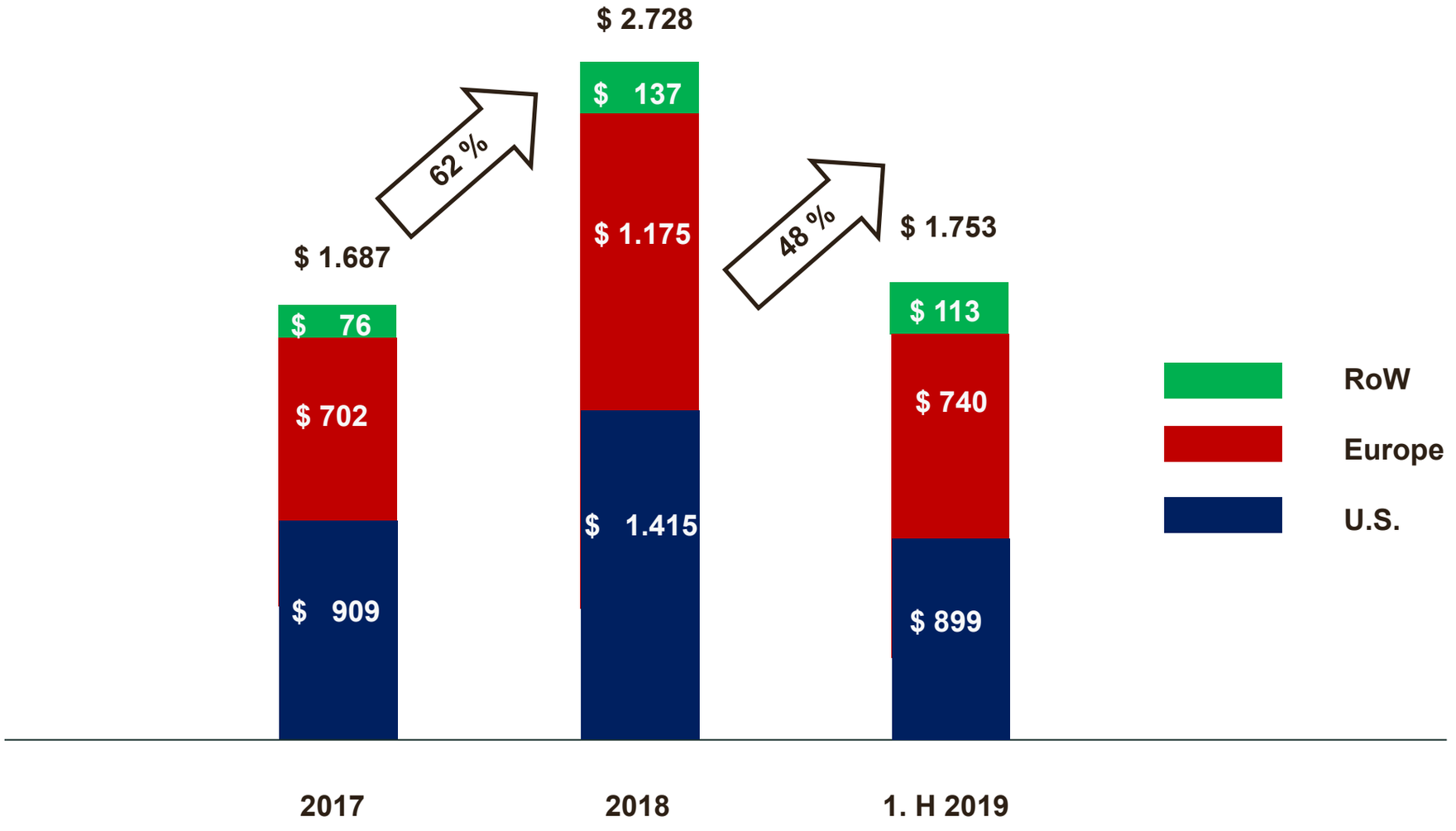
CGM - sales in M$



Lifecare

WW

CGM - sales in M$



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According to Harold Schnitzer Diabetes Health Center US presented at Diabetes Technology Meeting US 2017", this is what the diabetes patient wants for a CGM (continuous glucose measurement) device;

 # 1) Simple & Affordable

 # 2) Covered by insurance

 # 3) Long wear time

 # 4) High usability with integration

 # 5) Excellent accuracy

 # 6) No calibration required

 # 7) No interference

 # 8) No compression artifact

 # 9) Inconspicuous (not readily visible to others)

 # 10) Safe & comfortable

 # 11) Accessible data

Competitive Landscape

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Osmotic pressure measurement offers several major advantages

Low cost operation

- No reagent consumption
- High glucose specificity
- Long term stability
- Universal calibration
- No internal power supply
- No generation of poisonous by-products

- No additional start-up time
- Miniaturization
- Unobtrusive
- Implantation by injections/minimal surgery
- Real time continuous operation
- Wireless communication

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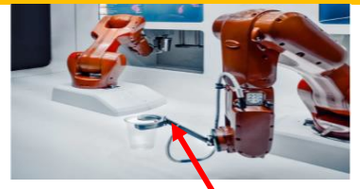
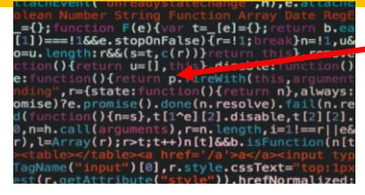
1. Digitalization	2. Urban Mobility	3. Machine Learning	4. Demography	5. Green World
Internet of things	El cars	Robotics	Generation X	Renewable Energy
E-commerce	Self driving cars	Artificial Intelligens	Healthy Lifestyle	Circular (and Water)
Industrial LoT	Infrastructure	Big Data & Clouding	Aging (Bio-Tech)	Electrifying
Communication	Transportation	Office and Home	Health (care)	Energy





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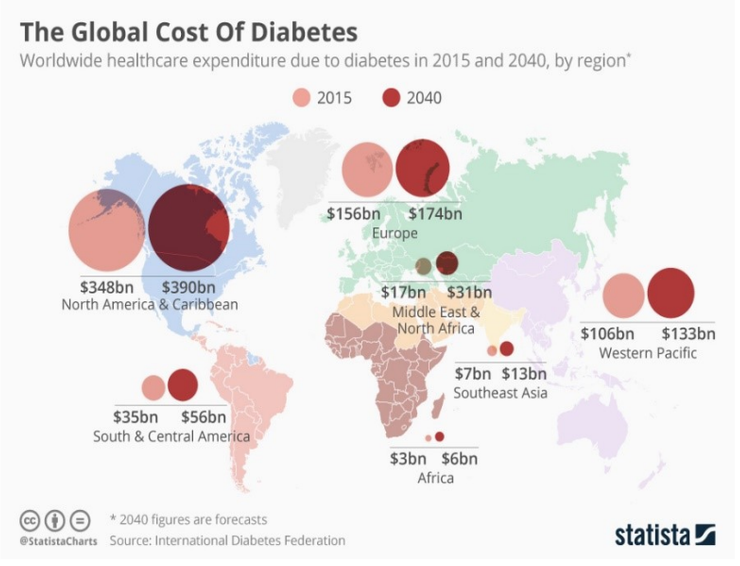
CGM: disruptive diabetes innovation today and near future



- Increase market share

Help people with diabetes live full,
healthy lives by developing comprehensive solutions that combine devices, software, medicine, and professional care to enable simple and intelligent disease management

- AI
- Big Data
- Robotics
- CGM

Meeting the needs

- Long-Term use
- No body worn devices
- Convenient
- Lower cost of care
- Actionable data
- Higher sensivity
- Improved quality of life

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Core technology protected by patents and FTO anlysis

Double membrane patent *2004*	• Composition of membranes • A pressure sensor with a chamber on each side, where the two chambers have individual semi-permeable membranes • Applies in USA, Canada, India, China, Japan, Norway, EPO(1)
Augmented osmotic pressure patent *2009*	• Apparatus for measuring augmented osmotic pressure • Patent applies in US • Approved EPO
Chemistry	• Active fluid composition and method of production and method of production of active fluid, which can be used in a sensor for measurement of glucose concentrations in fluids • Pending (Norway)
Dual sensor patent	• Implantable sensor with two chambers, each with a pressure sensor • Pending

Lifecare's shareholder base November 25th 2019

Date: 25/11/2019

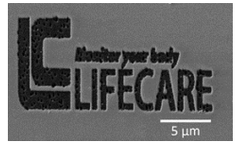
Number of investors: 311

Number of shares: 80 925 000

Holding	Stake	Name
15 032 030	18,57526	BECH INVEST AS
14 809 477	18,30025	TEIGLAND EIENDOM AS
10 658 301	13,17059	LACAL AS
7 634 920	9,42345	VERDIPAPIRFONDET NORDEA AVKASTNING
6 054 936	7,48216	SPAREBANKEN VEST
3 900 000	4,81928	STERNA HOLDING AS
3 787 879	4,68073	MP PENSJON PK
3 781 104	4,67236	Danske Invest Norge Vekst
1 812 500	2,23973	Deutsche Bank Aktiengesellschaft
1 587 358	1,96152	Rieber & Søn AS
1 515 152	1,87229	NORDA ASA
1 331 355	1,64517	CIMTER AS
710 012	0,87737	PROBE AS
689 379	0,85187	NEXUS MARKETING
590 625	0,72984	CLEARSTREAM BANKING S.A.
6 424 944	**7,93938**	Other
80 925 000	**100**	

Meeting the needs

- **Long-Term use**
- **No body worn devices**
- **Convenient**
- **Lower cost of care**
- **Actionable data**
- **Higher sensivity**
- **Improved quality of life**



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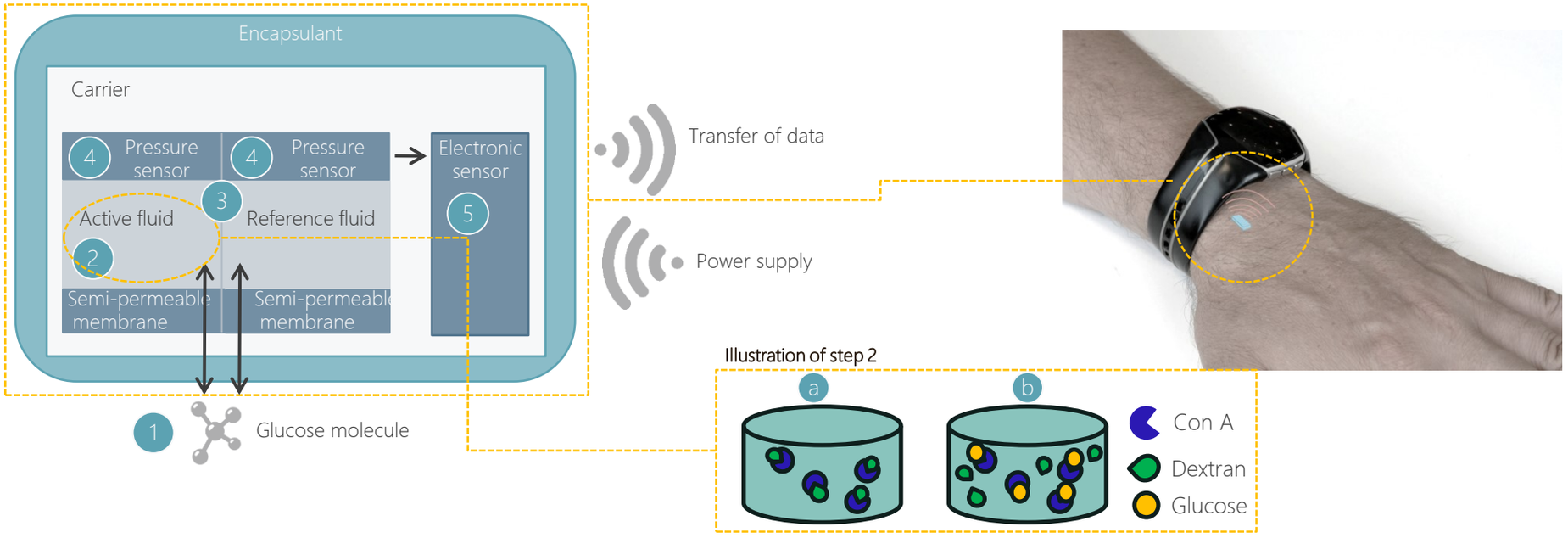
R&D

Progress

Reading osmotic pressure variations induced by glucose level changes



1. Glucose molecules pass through the semi-permeable membrane and into the micro-sensor
2a. The active fluid contains two molecules, Concanavalin A (ConA) and Dextran, which will bind together in the absence of glucose
2b. High concentrations of glucose induce ConA and Dextran dissociation and the formation of two new molecules: ConA / glucose and Dextran
3. The increase in osmotic pressure, equivalent to the number of bound glucose molecules, is measured as the difference in pressure between the active and reference fluid
4. The pressure sensor detects the increase in the osmotic pressure
5. Pressure signals are conveyed to the electronic sensor and sent to an external reader

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Lifecare Overview – Development Strategy

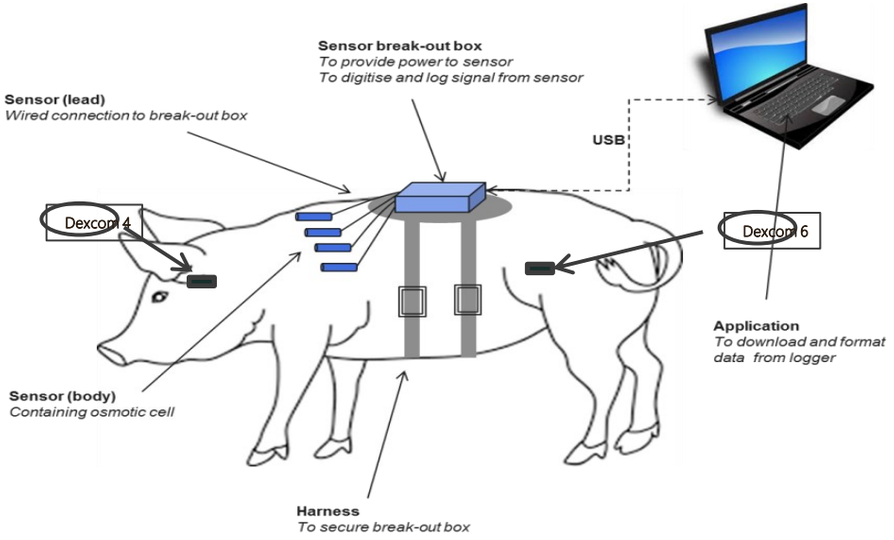
Macro Cell Sencell Miniaturized Sensor

Starting from a laboratory working cell (5 x 3 x 3 cm), the company has achieved significant miniaturization and has performed preclinical proof-of-concept with a small working sensor model (2 x 1 x 0.5 cm)

Pre -clinical

Cambridge Consultants

- Each system consists of four similar hand made sensor implants wired to a break-out box that collected measurement data for the duration of the trial, and 1-2 Dexcom4 devices.
- The sensors were designed against requirements (size, materials, etc.) agreed with Sciema and MfD to make them suitable for implantation
- Sensors were tested in Cambridge prior to shipping to Germany
- No sensor tests were undertaken on site prior to implantation



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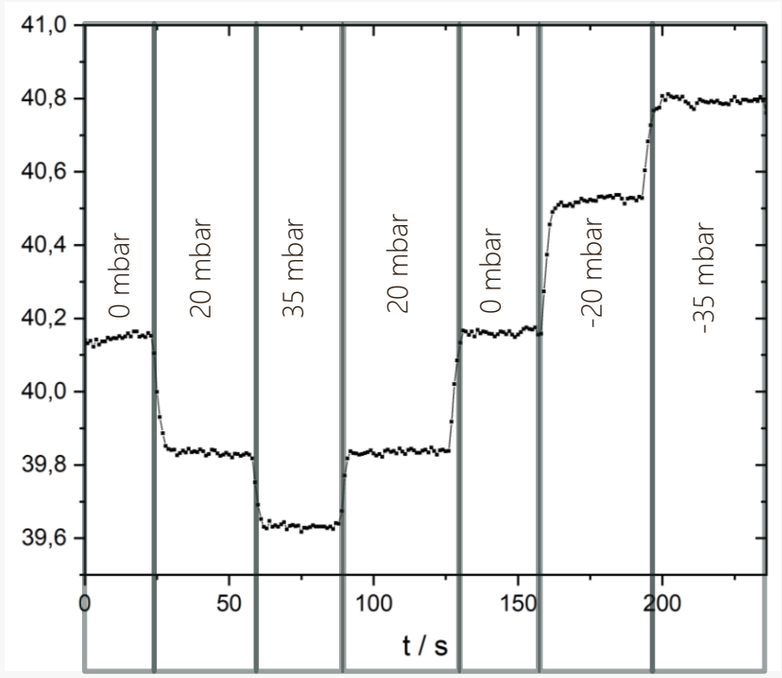
Lifecare Experimental Analysis – Nanosensor Performance

Measurement Curve



Calibration Protocol

- Measure Sensor Signal at 0 mbar pressure
- Measure Sensor Signal at 20 mbar pressure
- Measure Sensor Signal at 35 mbar pressure
- Measure Sensor Signal at 20 mbar pressure
- Measure Sensor Signal at 0 mbar pressure
- Measure Sensor Signal at -20 mbar pressure
- Etc….

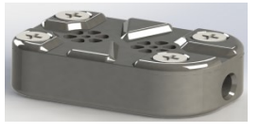
This protocol yields

- Calibration Curve
- Signal Hysteresis (Stability)
- Signal Stability (Resolution)

Overview - Optimized Development Strategy

Laboratory Cell

Preclinical I



Preclinical II

Sencell

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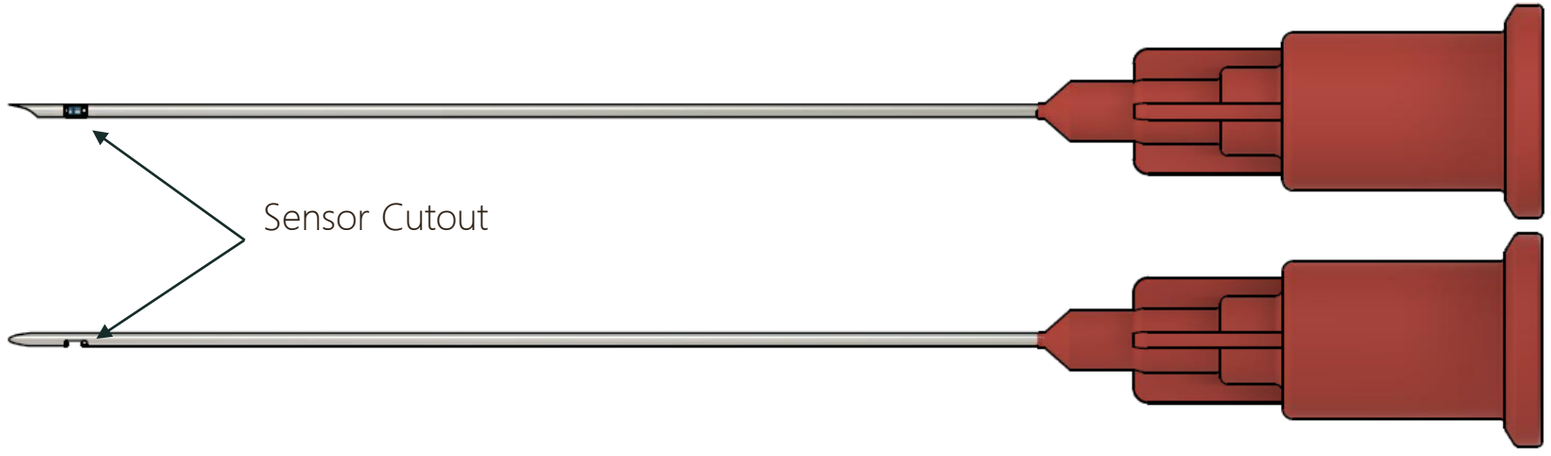
R&D Progress - Layout of Needle Sensor

Needle Type Sensor

- Wired Interface
  - Easy Signal Read-Out
- Sensor in Needle
  - Protected
- Measuring Conditions
  - Fully Controlled



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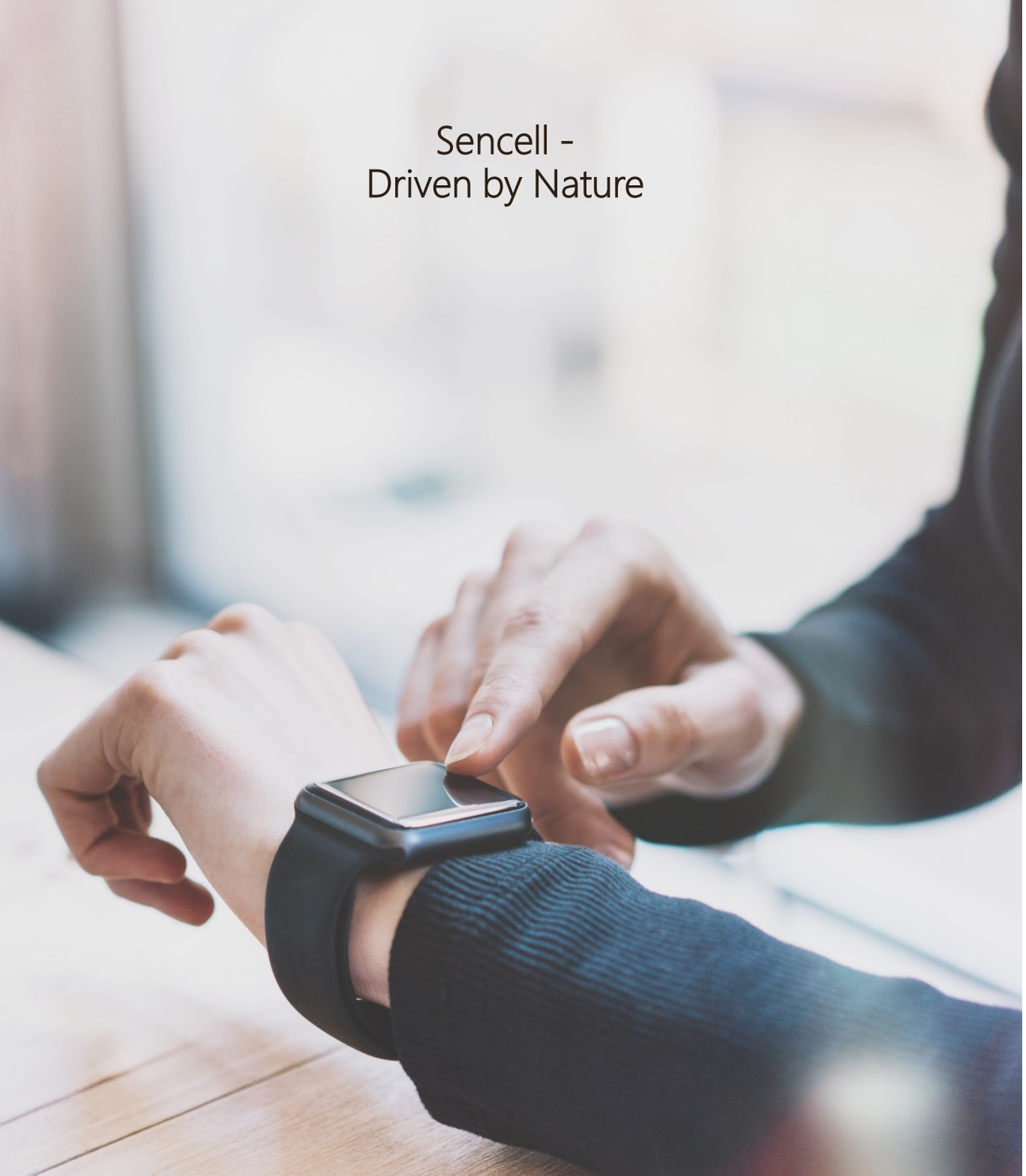

Let's
Execute
for Improved
Value Creation

Lifecare