

FOR MAKERS & INTEGRATORS · メーカー · 技術パートナーの皆さまへ

Your product. Our light engine inside.

CellLight™ and OptimalDose™ as one licensable module: red and near-infrared light with dose logic and session logging — proven in 17 systems, ready for rooms, beds, furniture and cars.

住まい・客室・家具・車に、ドーズ制御付きの光エンジンを。

4,608

LEDs in our flagship engine

13,000+

sessions logged

1st

vehicle project in development

● Now licensing

● TechBIZKON X · Tokyo 9 Oct

PARTNERS

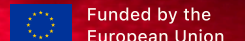


LE GRAND BELLEVUE



Luminous Labs FlexCo · Graz, Austria · founded 2021 · luminouslabs.health · September 2026

SUPPORTED BY



Furniture fixes the distance. That is exactly what dosed light needs.

A seat, a bed, a bathroom wall or a car interior defines where the body is — so the dose becomes something you can engineer, cap and log.

家具や車内は体との距離を固定します。だからこそ、光のドーズを設計できます。

01 Distance is the hidden variable

Twice the distance leaves a quarter to about two-thirds of the light. Panels leave it to the user; built-in products can fix it.

02 The engine is field-proven

CellLight™ runs in 17 Redgevity Master systems across 5 countries, with 13,000+ logged sessions. Patent pending (AT A65/2024).

03 It ships with the science

OptimalDose™ turns a 9,452-paper database into programme doses and caps. Tissue dosimetry with Politecnico di Milano is now funded through PhotonHub.

04 We would rather license than compete

For a large maker, we bring the engine and dose logic; you bring the product, the brand and the channel. A car interior is already in development.

AVAILABLE TO JAPANESE MAKERS ・ ライセンス

A licensable engine

MODULE	CellLight™ light engine + OptimalDose™ dose control, one module.
PACKAGE	Specifications, test data, change records and protocol know-how.
MODEL	Evaluation → prototype → co-development or supply → licence.
FIRST STEP	One application, evaluated together.

MEET US IN TOKYO

TechBIZKON X: LifeTECH+ ・ 9 Oct 2026 ・ also Osaka
2–5 Oct

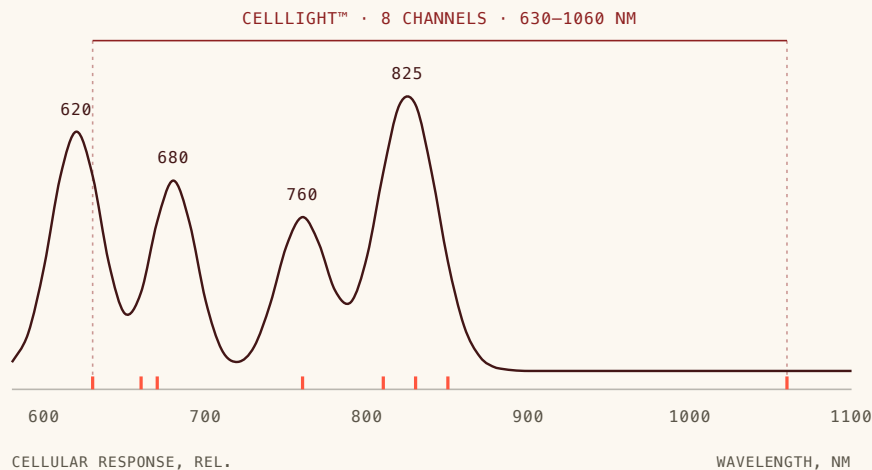
Distance: on-axis radiometry, company calculation. Licensing terms, field of use and exclusivity are agreed per project; no exclusivity is presumed.

The proposed target: complex IV of the respiratory chain.

Cytochrome c oxidase is the terminal enzyme of respiration. Its copper and heme centres absorb in the red and near-infrared — the band CellLight™ covers.

シトクロムcオキシダーゼの銅・ヘム中心は赤色光・近赤外光を吸収すると考えられており、CellLight™の8チャンネルはその帯域をカバーします。

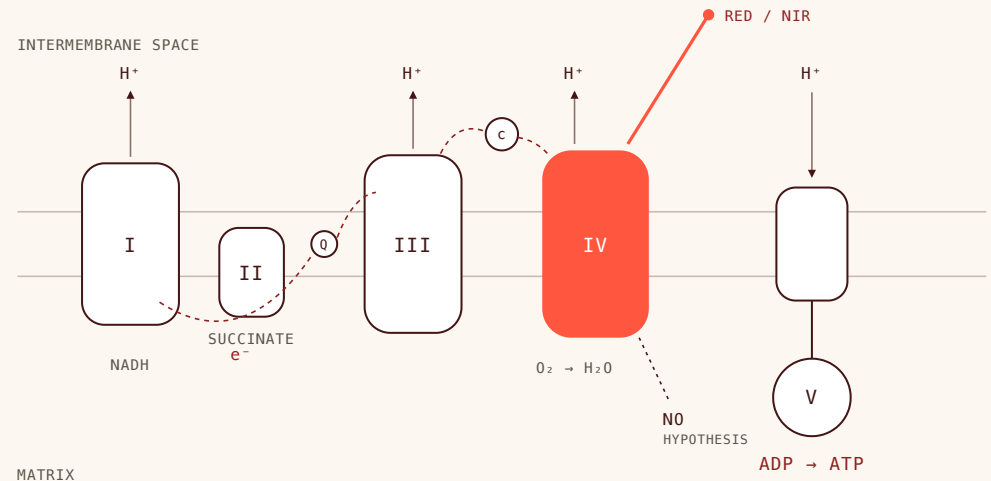
A Absorption



Action spectrum for cellular responses, schematic after Karu. Four peaks are attributed to CCO redox centres. Red ticks: the eight CellLight™ channels, 630–1060 nm.

Schematic. CCO involvement is supported in some experimental settings; isolated-enzyme work has not always shown stimulation, and other pathways exist. Sources: Karu, J Photochem Photobiol B 1999 · Wong-Riley, J Biol Chem 2005 · Quirk & Whelan 2021 · Pope & Denton 2023.

B The chain



Electrons pass I/II $\rightarrow$ Q $\rightarrow$ III $\rightarrow$ c $\rightarrow$ IV $\rightarrow$ O_2 . CCO absorbs red/NIR light; photodissociation of inhibitory NO is one proposed route to higher electron flux, a steeper proton gradient and more ATP.

Control the light. Measure the response.

CCO is a leading candidate — but PBM is not established as acting on one enzyme alone. Practical precision comes from controlling the optical exposure and measuring the response in the intended tissue.

OPTICAL SPECIFICITY · WHAT WE CONTROL

The inputs

Spectrum · 660 / 850 nm

Geometry · fixed distance

Irradiance · output limits

Exposure time · capped dose

Engineered, set and logged on every connected system.



BIOLOGICAL SPECIFICITY · WHAT WE MEASURE

The response

Which cells respond

Which pathways dominate

How much arrives in tissue

How each person responds

Measured in the intended tissue — the next step with Politecnico di Milano and our clinics.

THE EVIDENCE POINTS TO A NETWORK

At 808 nm, complex IV activity rose, complex III fell and complex II was unchanged; newer ovarian work implicates complex II regulation. Tissue and model matter. [3, 6]

HONEST ABOUT THE LIMITS

Isolated-CCO experiments found no stimulation under their tested conditions — which is exactly why application-specific testing decides. [2]

OUR ADVANTAGE TO BUILD

Hardware, programme control and individual intake in one system — a practical base for testing tailored exposure against measured delivery and response.

Conceptual distinction between engineering inputs and biological response. Sources: [2] Quirk & Whelan 2021 · [3] Pope & Denton 2023 · [6] Su 2026 · [P1] Luminous Protocol service description.

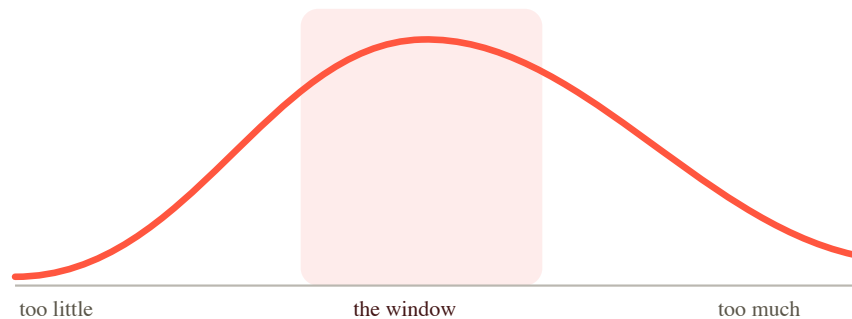
For the body, what matters is the dose — and the product decides the distance.

Too little light does nothing, too much does less — and distance changes the dose. So we fix the distance, set and cap the dose, and log every session on connected systems. Next, we measure what arrives.

光が多ければ良いわけではありません。距離を一定に保ち、光量（ドーズ）を設定して上限を設け、接続された施設用システムでは毎回のセッションを記録します。

01 · WHY THE DOSE MATTERS

Pattern seen in cell and animal studies: the biphasic dose response.



Twice the distance leaves a quarter to about two-thirds of the light.



CellLight™ light engine, patent pending (AT A65/2024) · OptimalDose™ dose control · Luminous Protocol personal plans · CE-marked wellness devices · dose curve: Huang et al., Dose-Response 2011 · distance: on-axis radiometry (company calculation).

02 · THE LOOP · TODAY AND NEXT

one personal plan from our science team

The Luminous Protocol

- 1 Set**
OPTIMALDOSE™
Each programme's dose, calculated and capped — on every Redgevity Master.
- 2 Deliver**
CELLLIGHT™
Red + near-infrared from our own light engine — 4,608 LEDs in the Redgevity Master.
- 3 Log**
EVERY SESSION
Each session on a connected system, recorded — 13,000+ so far.
- 4 Learn · next**
FROM 2027
Predict the energy absorbed in each tissue layer — funded with Politecnico di Milano (PhotonHub) — then adjust the dose for each person.

For an integrator: your product fixes the geometry; our engine sets, caps and logs the dose. Together that is a dosed product, not just a lamp.

Light, dose logic and logging — one module.

Three layers that work today on the Redgevity Master, plus the layer we are building next.



live

CellLight™

LIGHT ENGINE

Selected red and near-infrared wavelengths in purpose-built formats. In the Redgevity Master: 4,608 LEDs across eight nominal bands. The Luminous Kini: 660 + 850 nm.

Patent pending · AT A65/2024



live

OptimalDose™

DOSE CONTROL

Programme settings, timing and output limits: each programme's dose calculated and capped. Current Master drives red and NIR in two groups.

On every Redgevity Master



live

Session log

CONNECTED OPERATION

Each session on a connected system recorded — the basis for service, utilisation and learning.

13,000+ sessions logged



next

Sensing

MEASURE → ADAPT

Measure the light that arrives and adjust the dose for each person; a digital twin compares expected with measured response.

Funded with Politecnico di Milano
· PhotonHub

What you receive: a licensable engine with dose control, specifications and test data — plus access to the Luminous Protocol for personal plans, and to our clinic and research partners.

Implementation described is on the Redgevity Master; identical controls are not implied for every product. Surface settings are not a measurement of absorbed tissue dose. Independent control of every wavelength is not claimed.

The engine, by the numbers.

Reference configuration: the Redgevity Master, running in 17 systems. Module form factors are defined per integration.

基準構成：17台で稼働中のRedgevity Master。

70	8 λ	4,608	0–1,000
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mW/cm² irradiance

up to, at the treatment surface ・
all 8 channels driven

3.2

spectral channels

630 ・ 660 ・ 670 ・ 760 ・ 810 ・ 830 ・
850 ・ 1060 nm

LAN

LEDs

Redgevity Master configuration

3

Hz pulsing

programmable

CE

kW power

100–240 V

connectivity

IoT ・ every session logged

interfaces

guest kiosk ・ staff app ・ dashboard

non-medical

LVD ・ EMC ・ RoHS

Company specifications, Redgevity Master, Sep 2026.

Where the engine goes: the rooms people live in.

Long term, dosed light becomes health infrastructure — built into homes, hotels, workplaces and cars. The first vehicle project is already in development.



Car interior

First project · in development



Bathroom & bedroom

fixed position,
daily routine



Hotel room

the spa experience, in
the room



Beds & furniture

the body's position,
designed in



Workplace

recovery rooms,
wellness floors



Assisted living

for the most-aged society



FOR JAPAN

Japanese makers lead in housing, bathrooms, furniture and vehicles — and serve the world's most-aged market.

Applications beyond the Redgeivity Master, Luminous Kini and the vehicle project are development directions, not existing products. Room image: concept render, Luminous Labs 2024.

The moat is not the LED. It is the chain behind it.

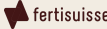
9,452 papers, turned into dosing logic and protocols, run on a connected fleet that logs every session — and clinics that measure.

私たちの強みはLEDではなく、研究・ドーズ設計・運用データのつながりです。

	Typical red-light panels	Clinic lasers & medical PBM	Pharma & hormones	Luminous Labs
The dose	sold by power at the panel	set by a clinician	a prescribed drug dose	set and capped; logged on connected systems; measured in tissue next
Distance to the body	you choose, so the dose varies	a handpiece, in the clinic	—	fixed position: lying in the Redgevity Master, the Luminous Kini on the skin
Evidence	rarely studied as sold	published, device by device	established for approved uses	9,452-paper database, clinic observations, controlled study next
Route in Japan	consumer electronics	medical-device approval	drug approval	wellness first; medical claims only on a separate route

Typical cases; individual products differ.

PARTNERS & VALIDATION

 BIOGENA KINDErwunsch INSTITUTE fertilisuisse

Investor, co-developer, operator · fertility clinic, Austria
· fertility clinics, Switzerland

RESEARCH

- Politecnico di Milano: measuring light in tissue (PhotonHub Phactory, Horizon Europe — funded)
- FFG Eureka Globalstars Japan: open for a Japanese co-applicant
- XPRIZE Ovarian Health: entry in preparation

RECOGNITION & IP

- Longevity Investors Conference, Gstaad: the only non-drug, non-invasive startup showcased
- CellLight™: patent pending (AT A65/2024)

Sources: Luminous Labs PBM research database (9,452 papers) · fleet records (Aug 2026) · CellLight™ patent application AT A65/2024 (pending) · PhotonHub Phactory innovation project with Politecnico di Milano, accepted Sep 2026 · FFG Eureka Globalstars Japan call (Austria–Japan R&D).

Every step has an endpoint. That is what makes it testable.

From absorbed photon to tissue response, each proposed step can be measured with established methods. We control and log the input; partners measure the output.

光の吸収から組織の反応まで、各段階を確立された方法で測定できます。

01 · INPUT

Absorption

Photon absorbed by CCO

heme a/a₃ · CuA/CuB centres

Dose delivered

spectrum · distance · irradiance · time
– set, capped, logged

02 · MITOCHONDRION

Respiration

NO dissociates

DAF-FM fluorescence

Electron flux ↑

oxygen consumption rate · Seahorse XF

Membrane potential ↑

TMRM · JC-1

Brief ROS signal

MitoSOX · DCFH-DA

03 · CELL

Signalling

ATP ↑

luciferase assay · ³¹P-MRS in vivo

cAMP ↑

immunoassay

Transcription factors

NF-κB activation · reporter assays

Local blood flow

NO-mediated · laser Doppler

04 · TISSUE

Response

Proliferation & migration

cell assays

Inflammatory signalling

cytokine panels

Endometrial thickness

transvaginal ultrasound – the
KIWI endpoint

Ovarian reserve

antral follicle count · AMH

Proposed cascade, simplified; relative contribution of each pathway depends on tissue and model. Sources: Hamblin, AIMS Biophys 2017 · Karu 1999 · Fear, 2023 (³¹P-MRS) · Su, Bioeng Transl Med 2026.

From devices to health infrastructure.

Today we set the dose and log it on connected systems. Next we measure it and adjust it for each person. Then the light engine goes into the rooms people live in.

ドーズの記録から計測、個人ごとの調整へと進み、光エンジンを住まいやホテルの空間に組み込んでいきます。

	TODAY · LIVE	NEXT · THIS ROUND	THEN · VISION
Technology log → measure → adapt	Dose set and capped by OptimalDose™; 13,000+ sessions logged	Funded now: predicted energy absorbed per tissue layer, with Politecnico di Milano (PhotonHub) — shipped to the fleet by firmware; then dosing per person	The same in the Luminous Kini at home; a digital twin compares expected with measured response
Market devices → health → buildings	Clinics, spas and hotels in 5 countries, plus homes; a car interior in development	Controlled clinic programme with KIWI · first system in Japan	Health infrastructure: bathroom, bedroom, hotel room, workplace, assisted living, car
Business hardware → software → licences	Hardware, sold with a monthly software licence	More systems and licences; first engine-licensing projects	Protocol updates and engine licences, then enterprise and API access

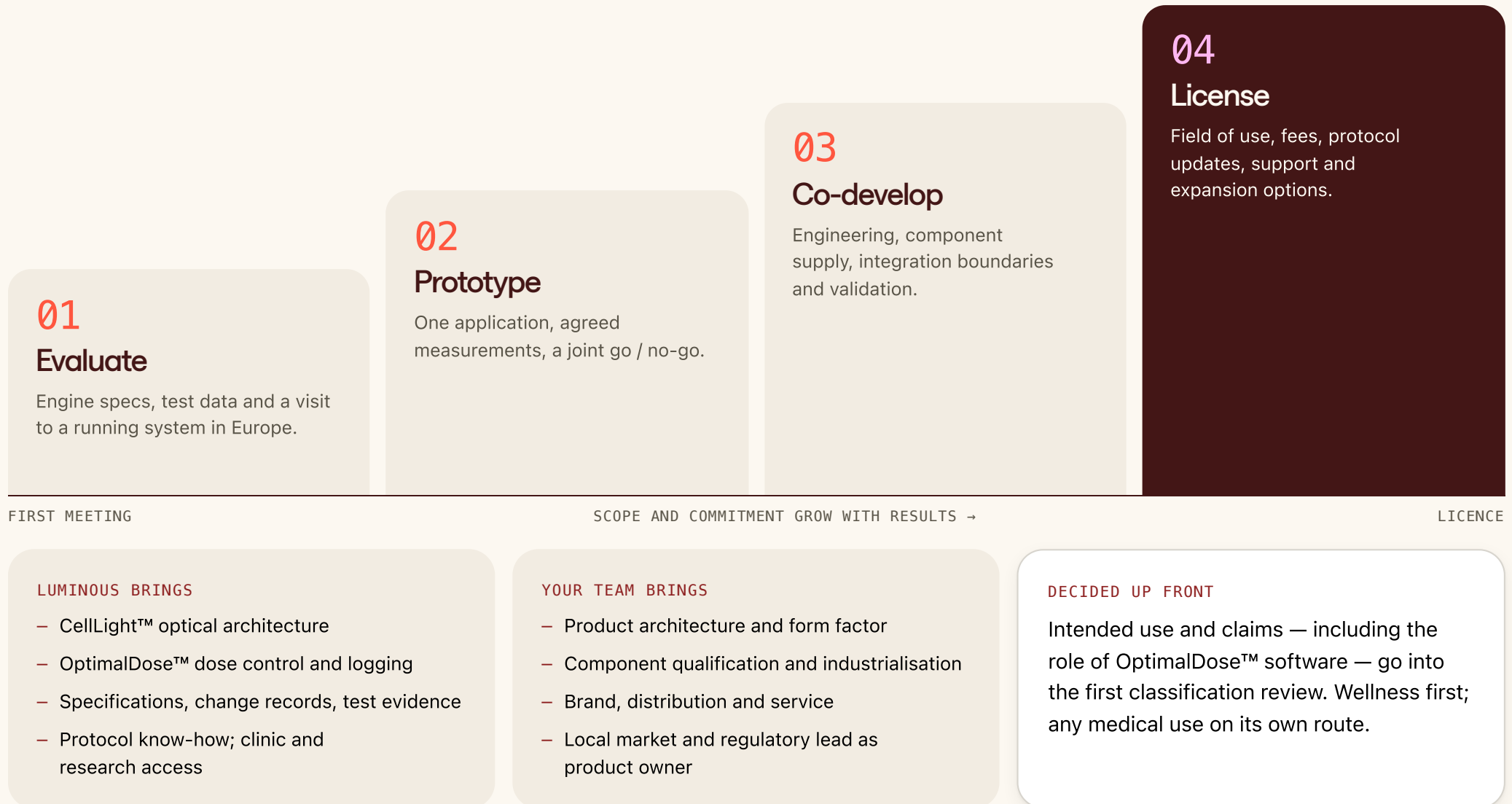


For a maker: the first engine-licensing projects are part of this round’s plan.

Roadmap: company plan, Sep 2026. Forward-looking; timing depends on funding, partners and validation. Room image: concept render, Luminous Labs 2024.

A defined contribution. Clear product ownership.

We start small — one application, one prototype — and write the licence when the engineering proves the case.



Proposed collaboration, not agreed terms. Fees, minimum commitments, quality obligations, IP and data rights belong in the project agreement. No exclusivity or regulatory responsibility is presumed.

Define the use. Build the route around it.

Every partnership starts with the intended use, the customer and the requirements of the Japanese market. Three routes — kept deliberately separate.

01 · NOW	02 · WITH A MAKER	03 · SEPARATE PROGRAMME
Wellness products & services	Technology integration	Medical development
CLAIMA non-medical wellness experience	CLAIMSet by the final product owner	CLAIMOne specific indication at a time
CHECKSPSE product safety · labelling · advertising wording	CHECKSClassification review, including software’s role in dosing	CHECKSPMD Act authorisation, reviewed by PMDA
WHO LEADS A Japanese importer with a regulatory specialist	WHO LEADS The product owner	WHO LEADS Sponsor with clinical partners
WE SUPPLY Systems, devices and guest-facing wording for review	WE SUPPLY Specifications, change records and test evidence	WE SUPPLY Dosimetry, device records and protocols
FIRST PRODUCT Redgevity Master in venues · Luminous Kini at home	FIRST PRODUCT Their product, our engine inside	FIRST PRODUCT Evidence first: controlled studies

WHY THREE ROUTES

A wellness claim and a medical programme on the same product put both at risk. We keep them apart from the first day — so each partner knows exactly which rules apply to what they sell.

Proposed approach; final product, claims, evidence and local obligations determine the route. Sources: [J2] PMDA, regulations and approval/certification of medical devices · [M1] PMD Act framework.

Wellness & hospitality → built-environment integration → reproductive-aging R&D.

ウェルネス・宿泊施設から始め、住まい・客室・車への組み込み、卵巣エイジングの共同研究へと三段階で進めます。

MOVE 1 · START

Wellness & hospitality

Ryokan, hotel spas, longevity and recovery studios in Kansai and Tokyo — the kinds of venues where our systems run in Europe.

FOR A JAPANESE PARTNER

A system already running in Europe, with guest kiosk and staff app; a joint review of the session log.

First step: one system, one room.

MOVE 2 · BUILD IN

Where you come in

Built-environment integration

The light engine inside homes, hotel rooms and cars, with Japanese partners, under their brand.

FOR A JAPANESE PARTNER

A licensable engine with dose control, specifications and test data.

Their product, our engine inside.

MOVE 3 · RESEARCH

Reproductive-aging R&D

From BioJapan, Yokohama, 7–8 Oct: research partners on ovarian aging and on measuring light in tissue.

FOR A JAPANESE PARTNER

A consortium role, dosimetry know-how and our 9,452-paper database.

Medical use only on its own
Japanese route.

WARM NETWORK

Biogen, GIN and Advantage Austria. Biogen Group: our strategic investor and operating partner in Europe. GIN and Advantage Austria: the GO TOKYO 2026 programme. Meetings in Osaka, Yokohama and Tokyo, 2–10 October.

REGULATORY

CE-marked wellness devices in Europe. In Japan: wellness first — classification, PSE and labelling confirmed with a Japanese importer and a regulatory specialist before the first system ships; medical claims only on a separate route.

Sources: GO TOKYO 2026 programme (GIN, Advantage Austria) · company meeting plan, 2–10 Oct 2026.

The team that built it, sold it and installed it — in five countries.

Engineering, science and sales under one roof in Graz, with the research and clinical partners who test the work.

開発・研究・販売を一つのチームで担い、5カ国に導入してきました。



Barbara Sekulovska

CEO & CO-FOUNDER

7 years in photobiomodulation and women's health research. Strategy, finance and partnerships — the Biogena relationship and this round.

Thomas Lechner

CTO & CO-FOUNDER

Lighting engineer, 10 years in LED hardware. Architect of the CellLight™ engine.

Sarah Wetzlmair

CHIEF SCIENCE

PBM research; built the 9,452-paper database behind OptimalDose™.

Angelo Jakup-Sekulovski

CHIEF SALES

12 years in health retail. B2B sales and roll-out — all 17 Redgevity Master installations.

RESEARCH & CLINICAL NETWORK

Politecnico di Milano — Prof. Antonio Pifferi, tissue optics · PhotonHub Phactory project, Horizon Europe · Das Kinderwunsch Institut Schenk · Fertilisuisse · Biogena Group, investor and co-developer

Let's pick the first application.

Meet Thomas — lighting engineer, ten years in LED hardware — and Barbara in Osaka or Tokyo. Bring a product; we'll bring the engine data.

10月9日、東京（TechBIZKON X）でお会いしましょう。



MEET US IN JAPAN ・ 日本でお会いしましょう

2 Oct **Osaka** ・ LifeTech+ Startup Night

5 Oct **Osaka** ・ EU-Japan Partnering

7–8 Oct **Yokohama** ・ BioJapan

9 Oct **Tokyo** ・ TechBIZKON X: LifeTECH+

Book an engineering session at TechBIZKON X, Tokyo, 9 Oct.

Or in Osaka, 2–5 Oct ・ specifications and test data available under NDA.



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Research database:

luminouslabs.health/database

Luminous Labs FlexCo ・ Graz, Austria ・ founded 2021 ・ Science Park Graz ・ Silicon Alps ・ Human Technology Styria

Every number, traceable.

Published literature, market data and company records behind this document. The full research database and data room are available on request.

PUBLISHED RESEARCH

[1]	Wong-Riley et al. (2005). Neuronal PBM and cytochrome c oxidase. J Biol Chem 280:4761–4771. DOI 10.1074/jbc.M409650200
[2]	Quirk & Whelan (2021). Isolated cytochrome c oxidase experiments. Photobiomodul Photomed Laser Surg 39:463–470. DOI 10.1089/photob.2020.4978
[3]	Pope & Denton (2023). 808 nm effects on mitochondrial electron-transport complexes. Mitochondrion 68:15–24. DOI 10.1016/j.mito.2022.11.002
[4]	Fear et al. (2023). ATP kinetics by ³¹ P-MRS after 670 nm PBM in older adults. Aging Cell 22:e14005. DOI 10.1111/accel.14005
[5]	He et al. (2024). PBM ameliorates ovarian aging via oxidative stress, inflammation and mitochondrial function. J Photochem Photobiol B 260:113024. DOI 10.1016/j.jphotobiol.2024.113024
[6]	Su et al. (2026). 630 nm LED phototherapy and ovarian function in advanced reproductive age. Bioeng Transl Med 11:e70117. DOI 10.1002/btm2.70117
[7]	Jafarabadi, Farbod & Shariat (2024). LLLT for IVF outcomes in recurrent implantation failure: an RCT. J Lasers Med Sci 15:e15. DOI 10.34172/jlms.2024.15
[10]	Stigliani et al. (2026). Near-infrared PBM and human oocyte rescue in vitro maturation. J Photochem Photobiol B 279:113452. DOI 10.1016/j.jphotobiol.2026.113452
[H4]	López-Otín et al. (2023). Hallmarks of aging: an expanding universe. Cell 186:243–278. DOI 10.1016/j.cell.2022.11.001
[D]	Huang et al., Dose-Response 2009 and 2011 (biphasic dose response) · Shimojo et al., J Biomed Opt 2020 (tissue optics, Osaka University) · Wai et al., Biol Reprod 2010.

JAPAN MARKET, BIOLOGY & REGULATION

[J]	MHLW life tables & healthy life expectancy 2022 · Statistics Bureau of Japan, 1 Oct 2024 · METI, women's health issues, Feb 2024 · JSOG ART registry 2023–2024.
[0]	Faddy, Hum Reprod 1992 · ACOG/ASRM 2014 · Garrison, Buck Institute 2023 (≈2.5×, expert estimate) · El Khoudary, Circulation 2020 · Greendale (SWAN) 2012 · Mosconi, PLoS ONE 2017.
[J2]	PMDA. Regulations and approval/certification of medical devices. pmda.go.jp
[M1]	Japan PMD Act and regulatory framework, PMDA overview and linked legislation.

COMPANY & PARTNERS

[C1]	Luminous Labs / Fertiluisse / Kinderwunsch Institut Schenk. From first cases to scalable evidence. Company whitepaper, 30 Jan 2026; unpublished.
[P1]	Luminous Labs. The Luminous Protocol: how we build a plan that's actually yours. 13 Aug 2026.
[P2]	Le Grand Bellevue. Le Grand Spa menu, winter 2025/26, p. 5.
[P3]	Luminous Labs. Biogena investment and partnership announcement, 13 Oct 2024.
[M2]	Forbes Austria and brutkasten, 2023.
[M3]	
[R]	Company records: 17 systems (Sep 2026); 13,000+ logged sessions (Aug 2026); 5,000+ devices; revenue ≈ €2.5M since 2021, unaudited; CellLight™ AT A65/2024 (pending).

A focused selection, current to Sep 2026. Published research uses other groups' devices and protocols; it is not evidence of efficacy for Luminous Labs devices, which are CE-marked wellness devices. Explore the research database: luminouslabs.health/database