FTO Checker

Market & IP Intelligence

YOUR INVENTION DESCRIPTION

"A wearable continuous monitoring patch combining microneedle-based interstitial fluid sampling with an integrated lab-on-chip for real-time metabolic analysis. Beyond standard glucose measurement, it simultaneously tracks lactate, ketone bodies, and cortisol through electrochemical biosensors on a flexible polymer substrate. A Bluetooth module transmits readings every 30 seconds to a companion application that uses a predictive algorithm to forecast hypoglycemic and hyperglycemic events up to 60 minutes ahead. The patch is designed for 14-day continuous wear using biocompatible hydrogel microneedles penetrating only the epidermis, requiring no finger-prick calibration. Primary applications include diabetes management and clinical metabolic research."

TABLE OF CONTENTS

Report date: 04-03-2026. **Report number:** 08ZD42

EXECUTIVE SUMMARY

We analyzed your invention across 120M+ patent publications from 100+ patent offices using keyword matching, claims analysis, and classification codes, then expanded results through Google's citation graph and similarity engine (details in Patent Intelligence).

Beyond patents, we screened scientific literature for prior art and technology readiness, mapped the competitive landscape and market timing, and tracked recent funding activity in the space to provide a complete due diligence picture.

RESEARCH ACTIVITY

2017 2026

Peak in 2023

PATENT FILINGS

2017 2026

Peak in 2021

PUBLIC INTEREST

2017 2026

Peak in 2026

FUNDING ACTIVITY

2017 2026

Peak in 2025

ACTIVE PATENTS

4

Your jurisdiction(s): Europe, US, CA

PENDING PATENTS

12

Your jurisdiction(s): Europe, US, CA

The wearable metabolic monitoring market shows emerging maturity with research peaking in 2023 and patent activity concentrated in 2021, while public interest and funding momentum accelerated through 2025-2026. The IP landscape remains fragmented across 16 active and pending patents, with no single dominant player—Bioling holds the largest share at two patents, while Kinaptic, Lifelens Technologies, One Drop Biosensor Technologies, and Synchneuro each hold single patents. Competitive activity centers on Abbott Laboratories, Medtronic, and DexCom, which collectively control 98% of US continuous glucose monitoring unit sales and integrated ecosystems, alongside recent funding rounds including Function Health's $298M Series B. Asia leads global R&D with 53% of identified

patents. Critical technical gaps exist in real-time multi-biomarker analysis and minimally invasive sampling integration—areas where the user invention directly addresses white space. The regulatory environment involves FDA device classification pathways, with recent 2026 guidance easing oversight of AI-enabled clinical decision support products relevant to predictive hypoglycemic forecasting.

MARKET INTELLIGENCE

The dynamic glucose monitoring patch market is projected to expand from USD 6. 0 billion in 2025 to USD 32. 2 billion by 2035, achieving an 18. 3% CAGR amid rising diabetes prevalence and technological advancements. Abbott, Dexcom, and Medtronic dominate as market leaders, commanding 98% of US CGM unit sales through integrated ecosystems, amid intense competition from eight key players and six recent deals. R&D concentrates heavily in Asia, capturing 53% of 40 tracked patents, while US FDA regulations classify devices across Classes I-III with 2026 guidance easing oversight for certain AI-enabled products.

Market outlook

💪 STRENGTHS

- Dynamic glucose monitoring patch market grows from USD 6. 0B in 2025 to USD 32. 2B by 2035 at 18. 3% CAGR.
- Continuous glucose monitoring (CGM) patches hold 41% market share with real-time tracking for Type 1/2 diabetes.
- Abbott FreeStyle Libre delivers proven glycemic control via factory-calibrated patches and data integration.

📉 WEAKNESSES

- High development costs limit scalability of multi-biomarker biosensors beyond glucose.
- Current CGM sensors face wear comfort issues and frequent replacement needs.
- Market fragmentation arises from inconsistent data standards across devices.

🎯 OPPORTUNITIES

- Asia-Pacific leads growth with China at 24. 7% CAGR due to diabetes prevalence and wearables.
- AI integration with CGM enables predictive analytics for metabolic events.
- Expansion into wellness tracking beyond diabetes via partnerships like Abbott-WeightWatchers.

⚠️ THREATS

- Abbott, Dexcom, Medtronic dominate with 98% US CGM unit sales and integrated ecosystems.

- Bioliq holds 2 pending patents in microneedle-based interstitial fluid monitoring.
- FDA regulatory hurdles delay multi-analyte patch approvals like lactate and cortisol sensors.

Competitive landscape

Key players developing products in this technology space.

COMPANY	PRODUCT / SOLUTION	HQ
Abbott Laboratories	FreeStyle Libre (continuous glucose monitoring system).	🇺🇸
Medtronic	Automated insulin delivery (AID) systems with integrated CGM.	🇮🇪
DexCom	Continuous glucose monitoring (CGM) sensors.	🇺🇸
Philips	Advanced health monitoring wearable patches.	🇳🇱
Vivalink	Wearable ECG monitor (cardiac patch) with multi-vital continuous monitoring.	🇺🇸
BioIntelliSense	BioButton® wearable device for continuous remote patient monitoring.	🇺🇸
iRhythm Technologies	Wearable cardiac monitoring patches.	🇺🇸
Bioliq	Biometric sensor patch with interstitial fluid extraction capabilities.	🇺🇸

Recent deals

Recent funding rounds, acquisitions, and partnerships involving key players in this space.

LifeScan and i-SENS **— Undisclosed** — 02/2026

LifeScan announced a transformational partnership with i-SENS to launch a continuous glucose monitoring system under the OneTouch® Vita brand, expected to launch in Germany, Ireland, Portugal, and Bel

Sequel Med Tech and Senseonics Holdings **— Undisclosed** — 02/2026

Launch of the integrated twiist™ Automated Insulin Delivery System with the Eversense® 365 CGM system, marking a significant collaboration to enhance diabetes management.

Diabeloop and Sequel Med Tech **— Undisclosed** — 01/2026

Diabeloop and Sequel Med Tech entered a partnership to integrate FDA-cleared DBLG2 into the twiist™ Automated Insulin Delivery System, aiming for product readiness by end of 2026 and launch in the US

Function Health **— $298M Series B** — 11/2025

Direct-to-consumer lab testing company offering remote patient monitoring and health data analysis.

Eight Sleep **— $100M** — 08/2025

Sleep technology company that provides smart sleep systems with remote monitoring capabilities.

Medtronic **— Undisclosed** — 07/2025

Medtronic announces a global partnership with Abbott.

Regulatory snapshot

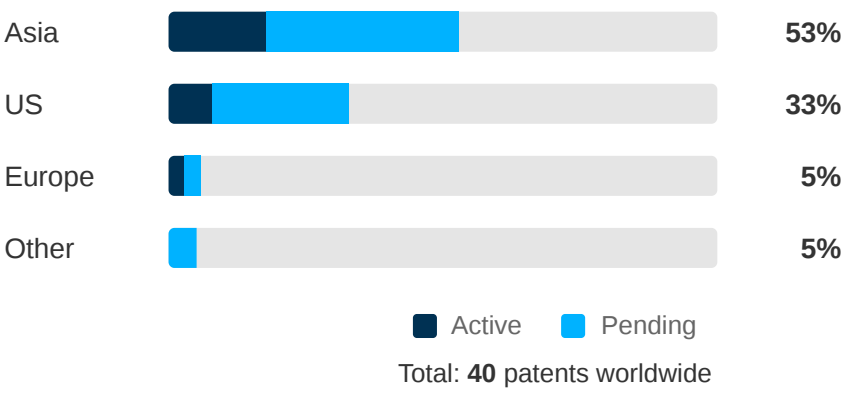
The search results provided focus exclusively on FDA regulations for medical devices and digital health technologies, with no information about EU regulations or industrial sector applications. The US regulatory path for digital health devices involves device classification (Class I-III) and corresponding premarket submissions, with recent 2026 guidance easing oversight of certain AI-enabled and clinical decision support products.

- US: Device classification determines pathway — Class I (registration/listing only), Class II (510(k) premarket notification), or Class III (PMA with clinical data); quality management systems and medical device reporting (MDR) required for all.
- EU: No EU regulatory information provided in search results.

Upcoming: US — January 2026 FDA guidance relaxed oversight of clinical decision support software and wellness devices, allowing market entry without premarket FDA review under certain criteria. EU — No information available.

Regional R&D activity

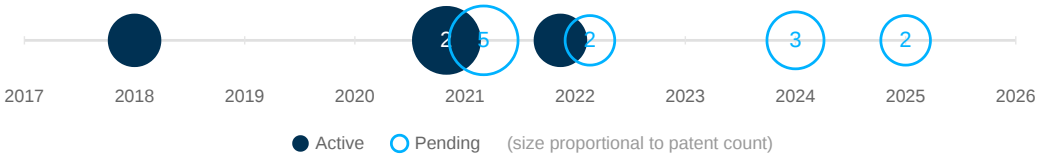
Global distribution of patent filings by region, indicating where R&D investment is concentrated.



PATENT INTELLIGENCE

This section provides a **deeper analysis of the patent landscape** by examining technical coverage, classification patterns, and key players.

Your jurisdiction(s): Europe, US, CA



Search strategy

We decomposed your invention into concept groups, key terms for patent claims analysis, and relevant CPC classification codes:

- **Concept groups:** wearable monitoring patch, continuous monitoring device, biometric sensor patch | microneedle sampling, interstitial fluid extraction, minimally invasive sampling | real-time metabolic analysis, electrochemical biosensors, metabolic biomarker detection | Bluetooth data transmission, wireless health data communication, remote health monitoring.
- **Claims terms:** continuous metabolic monitoring, microneedle-based sampling, real-time data transmission, predictive health algorithm, biocompatible hydrogel microneedles.
- **CPC codes:** A61B5/145, G01N33/50, A61B5/00, H04W4/02.

Using these elements, we ran **three complementary searches** — classification codes + keywords, patent claims analysis, and broad synonym matching — then expanded results through Google's citation graph and similarity engine. Results were deduplicated by patent family.

Technical coverage analysis

Maps your invention's core concepts against the patent landscape. Shows which ideas are heavily patented versus absent, helping identify white space opportunities or crowded areas.

ESTABLISHED COVERAGE

No concepts at this level

MODERATE COVERAGE

wearable monitoring patch	**2** active

4 pending

EMERGING COVERAGE

biometric sensor	**1** active **1** pending
microneedle sampling	**0** active **4** pending
interstitial fluid extraction	**0** active **3** pending
electrochemical biosensors	**0** active **2** pending

POTENTIAL WHITE SPACE

real-time metabolic analysis

minimally invasive sampling

💡 Moderate coverage in wearable monitoring patch (3-9 patents) indicates developing core technology. Emerging coverage in biometric sensor and microneedle sampling (1-2 patents each, 4 concepts total) shows nascent activity. Gaps in real-time metabolic analysis and minimally invasive sampling (0 patents) reveal unpatented areas.

Adjacent technologies

Identifies technologies present in existing patents but absent from your invention. Shows complementary approaches to consider for product development or defensive patenting.

CONCEPT	PATENTS
acoustic sensors	**3**
physiological analyte sensor	**2**
data processing module	**2**

CONCEPT	PATENTS
adhesive membrane	**1**
iontophoretic electrode	**1**

💡 Acoustic sensors (3 patents) and physiological analyte sensors (2 patents) show highest patent density in sensing approaches. Data processing modules (2 patents), adhesive membranes (1 patent), and iontophoretic electrodes (1 patent) indicate sparser activity in integration and alternative extraction methods.

Notable patent holders

Discusses the organizations and inventors dominating patent activity in your field. Shows potential collaboration opportunities, licensing candidates, or competitors requiring careful analysis.

MAJOR PATENT HOLDERS

Biolinq

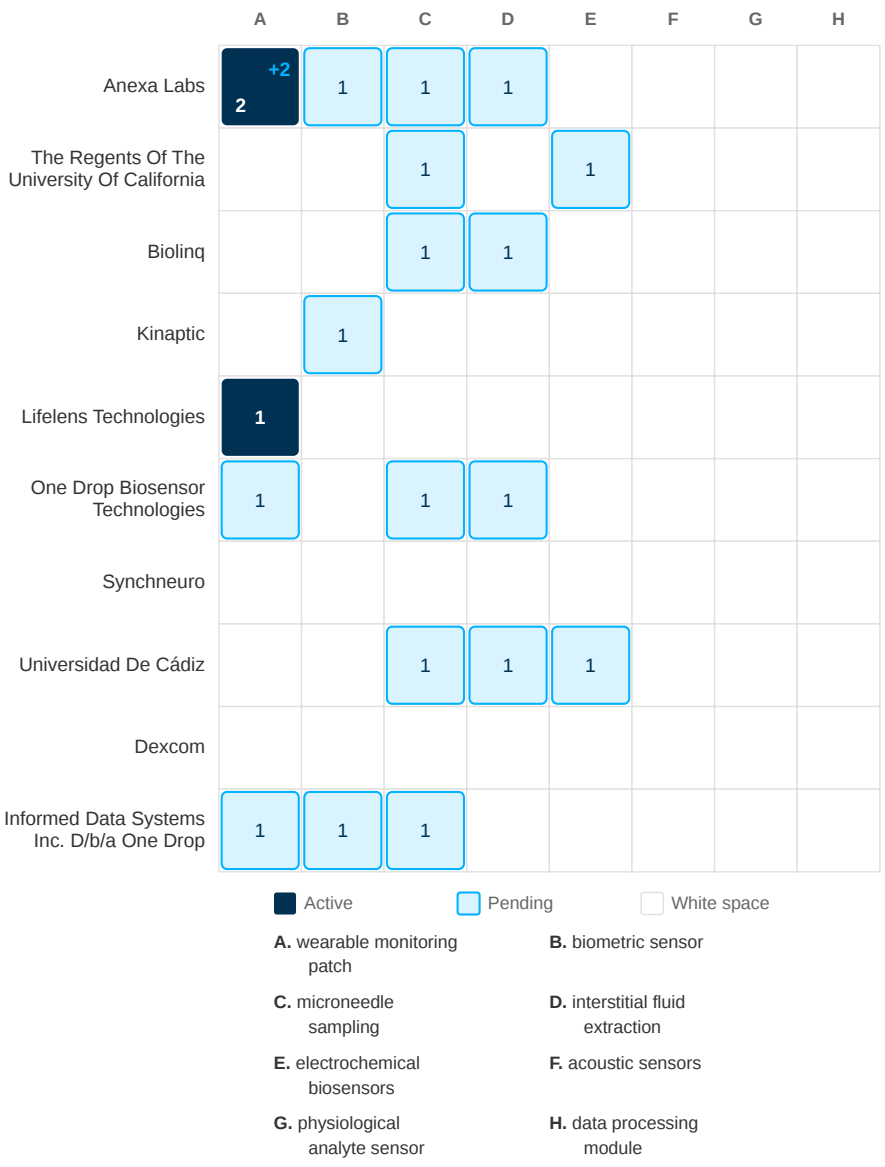
→ Healthcare technology company developing wearable biosensor patches for metabolic health monitoring

2 patents (0 active, 2 pending)

OTHER NOTABLE ENTITIES

Kinaptic — 1 patents (challenger)
Lifelens Technologies — 1 patents (challenger)
One Drop Biosensor Technologies — 1 patents (challenger)
Synchneuro — 1 patents (challenger)
Universidad De Cádiz — 1 patents (challenger)

💡 Patent landscape shows early-stage concentration with Biolinq holding 2 pending patents in microneedle-based multi-analyte sensing. Limited assignee diversity suggests nascent market with high technical barriers. Absence of established medical device giants indicates either emerging IP strategy or technology maturity stage preceding broader commercialization. Single dominant player pattern reflects pre-competitive consolidation phase.



Patent classifications

We targeted CPC codes A61B5/145, G01N33/50, A61B5/00, H04W4/02.

💡 Classification pattern reveals heavy concentration on wearable patches (A61B5/6833, 63%) and glucose sensing (A61B5/14532, 63%; A61B5/14514, 38%), with supporting metabolic (A61B5/01, 31%) and analyte codes (A61B5/1473, A61B5/14546, 31%). Dominance indicates biosensor innovation focus. Absent: wireless (H04) and algorithm (G16H) codes.

Research activity

Academic research publications related to your invention's technology domain. These indicate R&D activity and emerging scientific foundations.

Skin electronics from scalable fabrication of an intrinsically stretchable transistor array

Nature (01-01-2018)

→ Developed stretchable transistor arrays for advanced skin electronics applications.

Healthcare Blockchain System Using Smart Contracts for Secure Automated Remote Patient Monitoring

Journal of Medical Systems (01-01-2018)

→ Blockchain enhances secure automated remote patient monitoring through smart contracts in healthcare.

Effectiveness of Remote Patient Monitoring After Discharge of Hospitalized Patients With Heart Failure

JAMA Internal Medicine (01-01-2016)

→ Remote patient monitoring improves outcomes for heart failure patients post-hospital discharge.

Flash Glucose-Sensing Technology as a Replacement for Blood Glucose Monitoring for the Management of Insulin-Treated Type 2 Diabetes: a Multicenter, Open-Label Randomized Controlled Trial

Diabetes Therapy (01-01-2016)

→ Flash glucose-sensing technology effectively replaces traditional blood glucose monitoring in diabetes management.

Remote patient monitoring: a comprehensive study

Journal of Ambient Intelligence and Humanized Computing (01-01-2017)

→ Remote patient monitoring enhances healthcare efficiency and patient engagement through technology integration.

💡 Stanford University (US, 21 papers, 1915 average citations) and Harvard University (US, 16 papers, 66 average citations) dominate the research landscape. Publication peaked during 2020-2021 at 33% of total output, then declined, indicating field maturation following initial growth. Funding remains institution-driven or fragmented rather than coordinated. Average citation rate of 157 per paper with 70% open access demonstrates moderate research impact and accessibility within this domain.

YOUR TOP 10 MOST SIMILAR ACTIVE PATENTS

See our patent scoring methodology for details on how scores are calculated.

1. **Multi-sensor auscultation device**

   Publication number: US11141129B1
   Publication date: 12-10-2021
   Inventor(s): Ana Trapero Martin
   Patent holder(s): Anexa Labs
   Jurisdiction: US

   View patent → View similar patents →

   💡 This patent enables acoustic monitoring using accelerometer contact microphones for physiological assessment. It shares wearable technology with the user invention but focuses on sound-based diagnostics, contrasting with the user's biochemical analysis for metabolic monitoring and prediction.

   📤 Share patent overview

2. **Multi-sensor wearable patch**

   Publication number: US11116448B1
   Publication date: 14-09-2021
   Inventor(s): Ana Trapero Martin
   Patent holder(s): Anexa Labs
   Jurisdiction: US

   View patent → View similar patents →

   💡 This patent enables acoustic data collection via accelerometer contact microphones for physiological monitoring. Overlaps with user invention's wearable sensor focus but differs by emphasizing acoustic sensing rather than electrochemical biosensing for metabolic analysis, targeting broader physiological applications.

   📤 Share patent overview

3. **Modular physiologic monitoring systems, kits, and methods**

   Publication number: US11284831B2
   Publication date: 29-03-2022
   Inventor(s): Landy Toth
   Patent holder(s): Lifelens Technologies
   Jurisdiction: US

   View patent → View similar patents →

💡 This patent protects modular patch interfaces for wireless physiologic signal monitoring. It shares real-time data transmission with the user invention but lacks integrated metabolic analysis, focusing on modularity and adaptability across different physiologic parameters rather than specific metabolic tracking.

📤 Share patent overview

4. **System for the self-monitoring and regulation of blood glucose**

Publication number: EP2685895B1

Publication date: 10-10-2018

Inventor(s): Michael Catt

Patent holder(s): University Of Newcastle Upon Tyne

Jurisdiction: EP

View patent → View similar patents →

💡 "This patent enables physiological analyte regulation via movement-sensor-triggered feedback. It shares real-time metabolic monitoring with the user invention but focuses on glucose regulation, lacking the multi-analyte tracking and predictive algorithm for hypoglycemic events found in the user's design.

📤 Share patent overview

YOUR TOP 10 MOST SIMILAR PENDING PATENTS

These are patent applications that have been published but not yet granted. They represent potential future patents in your technical domain.

1. **Non-invasive and wearable chemical sensors and biosensors**

   Publication number: US20210076988A1

   Publication date: 18-03-2021

   Inventor(s): Joseph Wang

   Patent holder(s): The Regents Of The University Of California

   Jurisdiction: US

   View patent application → View similar patents →

   💡 This patent protects non-invasive analyte detection using an iontophoretic electrode for sweat induction. It shares epidermal electrochemical sensing with the user invention but differs by focusing on sweat analysis rather than interstitial fluid sampling for metabolic monitoring.

   📤 Share patent overview

2. **Microneedle arrays for biosensing and drug delivery**

   Publication number: US20220151516A1

   Publication date: 19-05-2022

   Inventor(s): Joseph Wang

   Patent holder(s): The Regents Of The University Of California

   Jurisdiction: US

   View patent application → View similar patents →

   💡 This patent enables microneedle arrays for biosensing and drug delivery, focusing on hollow needle structures. It shares interstitial fluid sampling with the user invention but lacks integrated lab-on-chip metabolic analysis, emphasizing drug delivery over real-time monitoring.

   📤 Share patent overview

3. **Devices And Methods For The Mitigation Of Non-Analyte Signal Perturbations …**

   Publication number: US20210379370A1

   Publication date: 09-12-2021

   Inventor(s): Joshua Ray Windmiller

   Patent holder(s): Biolinq

   Jurisdiction: US

   View patent application → View similar patents →

💡 This patent enables mitigation of non-analyte signal perturbations in body-worn sensors, enhancing measurement accuracy. Overlaps with user invention's electrochemical biosensors but differs by focusing on error reduction rather than expanding analyte range or predictive capabilities.

📤 Share patent overview

4. **Methods and apparatus for a wearable electronic digital therapeutic device**

Publication number: US20210244941A1

Publication date: 12-08-2021

Inventor(s): John J. Daniels

Patent holder(s): Kinaptic

Jurisdiction: US

View patent application → View similar patents →

💡 "This patent enables therapeutic response monitoring via biometric detectors, focusing on treatment efficacy. Overlaps with user invention in wearable sensing; differs by targeting therapeutic outcomes rather than metabolic analysis, emphasizing treatment response over predictive metabolic forecasting.

📤 Share patent overview

5. **Interoperability and data exchange capabilities between a blood glucose monitor …**

Publication number: US20240341636A1

Publication date: 17-10-2024

Inventor(s): Richard Chien Yang

Patent holder(s): Biolinq

Jurisdiction: US

View patent application → View similar patents →

💡 This patent enables interoperability between blood glucose monitors through data exchange protocols. It overlaps with the user invention's real-time data transmission but differs by focusing on device interconnectivity rather than multi-analyte metabolic analysis.

📤 Share patent overview

6. **Multi-sensor wearable patch**

Publication number: US20250017532A1

Publication date: 16-01-2025

Inventor(s): Ana Trapero Martin

Patent holder(s): Anexa Labs

Jurisdiction: US

View patent application → View similar patents →

💡 This patent enables acoustic data collection via accelerometer contact microphones for physiological monitoring. Overlaps in wearable design with user invention, but diverges by focusing on auscultation rather than electrochemical biosensing for metabolic analysis, targeting cardiovascular diagnostics.

📤 Share patent overview

7. **Wearable microneedle patch**

Publication number: US20210275097A1
Publication date: 09-09-2021
Inventor(s): Ashwin Pushpala
Patent holder(s): One Drop Biosensor Technologies
Jurisdiction: US

View patent application → View similar patents →

💡 This patent enables continuous monitoring via a microneedle patch with integrated electrodes for interstitial fluid analysis. Overlaps in fluid access; however, it lacks the user invention's lab-on-chip integration for multi-metabolite real-time analysis and predictive capabilities.

📤 Share patent overview

8. **Blood glucose states based on sensed brain activity**

Publication number: US20240293048A1
Publication date: 05-09-2024
Inventor(s): Casey Halpern
Patent holder(s): Synchneuro
Jurisdiction: US

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💡 This patent enables glucose state prediction using brain activity data, contrasting with the user's metabolic analysis via microneedles. Both target glucose monitoring, but differ in sensor type and predictive modeling—complementary rather than directly overlapping in application.

📤 Share patent overview

9. **Device for monitoring interstitial lactate and ph levels**

Publication number: EP4559393A1
Publication date: 28-05-2025
Inventor(s): Juan Jesús Fernández Alba
Patent holder(s): Universidad De Cádiz
Jurisdiction: EP

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💡 This patent enables continuous interstitial lactate and pH monitoring via microinvasive skin-adhering patches. Overlaps with user invention in microneedle fluid extraction; differs by focusing on pH, lacking multi-analyte tracking and predictive glucose analytics.

📤 Share patent overview

10. **Analyte sensor with impedance determination**

Publication number: US20240423518A1
Publication date: 26-12-2024
Inventor(s): Sebastian Böhm
Patent holder(s): Dexcom
Jurisdiction: US

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💡 This patent enables impedance-based analyte detection, optimizing sensor accuracy through bias voltage adjustments. Overlaps with user invention's metabolic monitoring; however, it focuses on sensor calibration, while the user invention emphasizes multi-analyte tracking and predictive glucose event forecasting.

📤 Share patent overview

NEXT STEPS

Run a new FTO Checker search

Try again with a modified description to explore other patent families or technical variants.

Start New Search →

⚠ This is an **automated early-stage analysis** designed to help you explore potential patent risks. It is **not legal advice**, and we cannot guarantee freedom to operate or absence of infringement risks. If you plan to commercialize your invention, we recommend discussing the results with a qualified patent attorney.