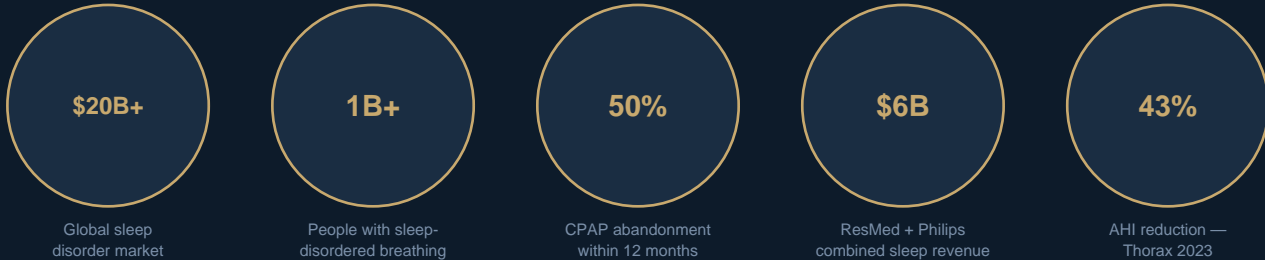


Breathing intervention at the source.

Not after the apnea. Not through a mask. bioverà detects airway instability as it begins and responds in real time — silently, precisely, without waking the user.



THE PROBLEM

Current solutions treat the symptom, not the source.

Every existing device intervenes after breathing has already failed. bioverà works upstream — at the nasal pathway — before disruption occurs.

<h4>CPAP — THE OLD WAY</h4> <ul style="list-style-type: none">✗ Forced airflow✗ Prescription required✗ Machine at bedside✗ 50% quit within 1 year	<h4>SANCTUARY BAND — BIOVERA</h4> <ul style="list-style-type: none">✓ No mask, no machine✓ No prescription needed✓ Works below arousal threshold✓ Upstream — intervenes at onset
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THE OLD MODEL

Downstream. Reactive. Intolerable.

- ✗ CPAP forces air in after the airway collapses
- ✗ 50% of patients abandon it within a year
- ✗ Masks, hoses, noise — machine at bedside
- ✗ Jaw devices don't sense or respond
- ✗ Implanted stimulators require surgery
- ✗ None detect instability before it becomes an event

THE BIOVERA MODEL

Upstream. Predictive. Invisible.

- ✓ Detects instability at the nasal pathway — at onset
- ✓ Non-arousing vibrotactile feedback
- ✓ No mask, no hose, no forced airflow, no machine
- ✓ Works below arousal threshold — user stays asleep
- ✓ Soft wearable band — 7-night battery life
- ✓ Platform architecture — multiple embodiments

Three steps. Happening while you sleep.

The Sanctuary Band is a closed-loop system. It operates at the nasal pathway — where instability begins, not where it ends.



<h2>01</h2> <h3>Sense</h3> <p>Continuous airflow monitoring at the nasal interface detects early-stage instability and snoring onset before they progress to apnea or wakefulness.</p>	<h2>02</h2> <h3>Interpret</h3> <p>Onboard processing classifies the event, determines intervention type and intensity, and calibrates to the individual user — getting smarter each night.</p>	<h2>03</h2> <h3>Respond</h3> <p>Precisely tuned vibrotactile stimulation guides the nasal airway back to stability — below the arousal threshold. The user never feels it. The airway does.</p>
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PEER-REVIEWED EVIDENCE

Not a theory. A published body of science.

Every mechanism bioverà relies on is supported by independent peer-reviewed research. These studies were not funded by bioverà.

- Imperial College London
- University of Oxford
- Karolinska Institute
- Atatürk University
- BMJ / Thorax
- Neuroscience Journal

<p>VIBROTACTILE THERAPY — META-ANALYSIS</p> <h2>43% AHI reduction</h2> <h3>Vibrotactile therapy significantly reduces apnea severity</h3> <p>Systematic review of 18 studies (10 RCTs, 8 cohort studies) — vibrotactile positional therapy reduced AHI by 43% and supine sleep time by 70% using non-arousing vibratory feedback. No masks, no forced airflow.</p> <p>ALQarni AS, Turnbull CD, Morrell MJ, Kelly JL. <i>Thorax</i>. June 2023. Imperial College London / University of Oxford. PubMed ID: 37344178</p>	<p>TACTILE STIMULATION — SLEEP DEVICE</p> <h2>Snoring corrected without arousal</h2> <h3>Wearable tactile stimulation corrects sleep-disordered breathing</h3> <p>SNORAP demonstrated real-time snoring detection and corrective tactile stimulation for mild-moderate sleep-disordered breathing without requiring arousal — validating the sense-interpret-respond closed-loop architecture.</p> <p>Yaşanoğlu M, Kayabekir M, Köse C. <i>Sensors</i>. September 2017. Atatürk University / Karadeniz Technical University. DOI: 10.3390/s17092006</p>
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Restored alertness. No arousal required.

External trigeminal nerve stimulation restores alertness after sleep deprivation

eTNS exhibits measurable alertness-restoring and relaxation effects in fatigue states — supporting biovera's use of nasal-pathway stimulation for sleep stabilization, driver fatigue, and daytime recovery applications.

Chen Cheng, Xinxin Xue, Yunyun Jiao, Rui You, et al.

Neuroscience. Volume 567, Pages 123–132. Published February 2025.

DOI: 10.1016/j.neuroscience.2024.12.044

15× nitric oxide surge at nasal cavity

Oscillating nasal airflow produces a 15-fold increase in nitric oxide

Humming — which creates oscillating airflow through the nasal cavity — increases nasal nitric oxide 15-fold vs quiet exhalation. Nitric oxide is a key airway vasodilator and bronchodilator. Establishes the nasal cavity as uniquely reactive to mechanical oscillation.

Weitzberg E, Lundberg JON.

American Journal of Respiratory and Critical Care Medicine. Vol. 166, Pages 144–145. 2002. Karolinska Institute, Stockholm.

The nose is not just an airway. It is a control surface.

The nasal interface is the most information-dense, physiologically responsive access point in the respiratory system. bioverà is the first platform to treat it that way.

Earlier signal capture



Sensing at the nasal pathway detects instability before it propagates downstream — enabling intervention seconds earlier than chest, wrist, or jaw-based approaches. Early enough to prevent the event entirely.

Sub-arousal response threshold



Vibrotactile stimulation at the nasal bridge operates below the arousal threshold of the sleeping nervous system. The airway tissue responds. The brain does not wake up. This is the core clinical breakthrough.

Trigeminal nerve access



The trigeminal nerve — the primary sensory nerve of the face — is directly accessible at the nasal bridge. Peer-reviewed research confirms external trigeminal stimulation modulates autonomic tone, alertness, and respiratory behavior non-invasively.

Closed-loop adaptive architecture



bioverà senses, classifies, responds, and observes the outcome continuously — adapting to individual physiology each night. The same closed-loop architecture that powers precision medicine, applied to sleep in a wearable band.

MARKET OPPORTUNITY

A broken market. A clear replacement.

CPAP has been the standard of care for 40 years. Half of all patients abandon it. ResMed and Philips generate billions annually from a device most patients quit. bioverà addresses the gap — non-invasive, prescription-free, mask-free, grounded in peer-reviewed science, built for licensing at scale.

Feature	CPAP	Sanctuary Band
Requires mask or forced airflow	Yes	No
Requires prescription	Yes	No
Intervenes before apnea event	No	Yes
Wakes user during use	Often	No
12-month patient adherence	~50%	Ongoing
Machine required at bedside	Yes	No
Licensing and platform architecture	No	Yes

The science is solid. The product is real.

No mask. No machine. No prescription. First batch in production.

biovera.ai/sanctuary-band

Patent Pending No. 19/422,340

4 Peer-Reviewed Studies

150+ Early Customers

\$20B+ Market