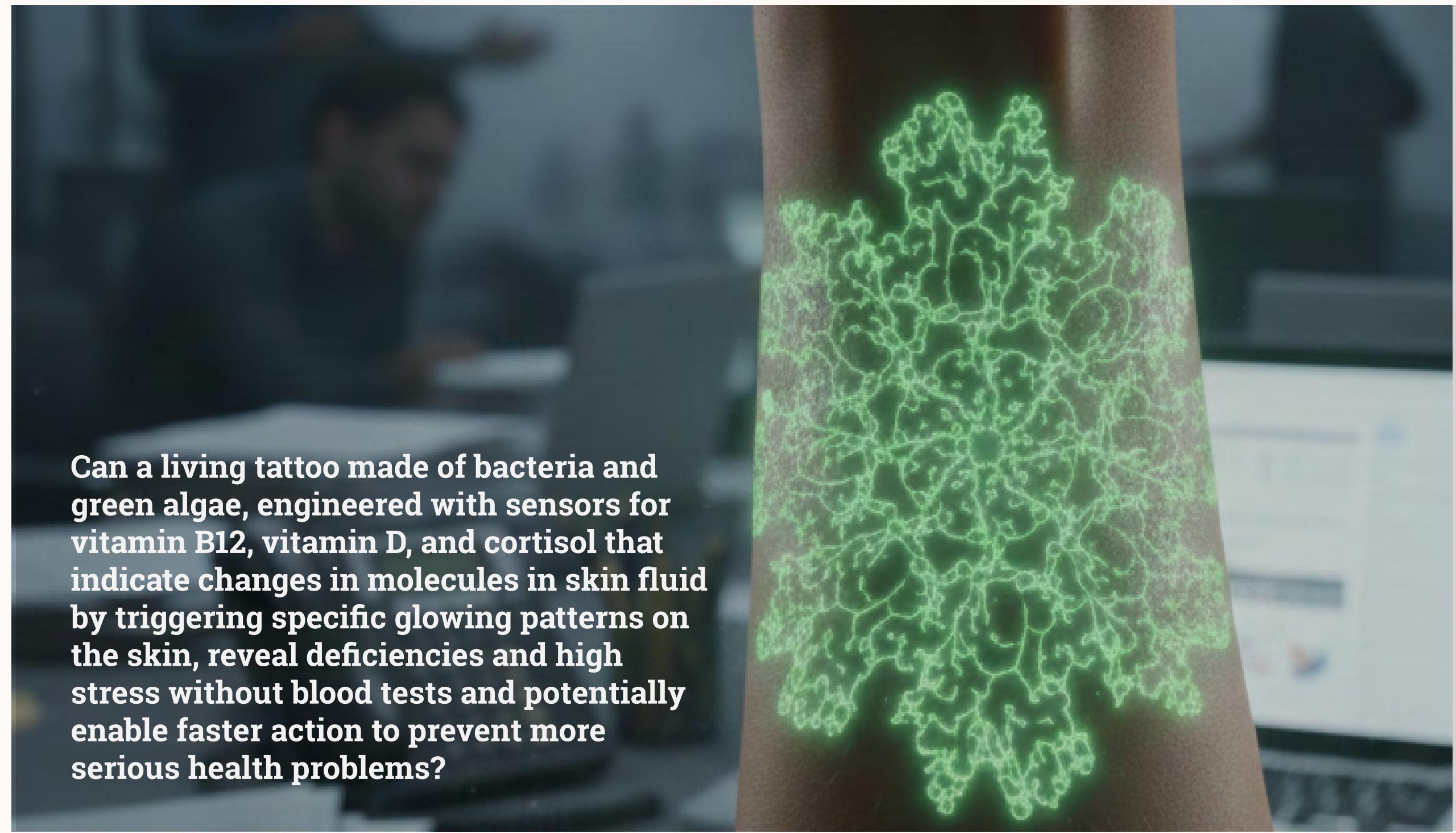


# BioCue

## A Living Biophilic Tattoo that Shows You What Your Body Needs



This image is generated by Nano Banana

Can a living tattoo made of bacteria and green algae, engineered with sensors for vitamin B12, vitamin D, and cortisol that indicate changes in molecules in skin fluid by triggering specific glowing patterns on the skin, reveal deficiencies and high stress without blood tests and potentially enable faster action to prevent more serious health problems?

BioCue is a fictional living tattoo; a hybrid organism that lives gently on human skin and turns invisible body signals into visible glowing patterns. It focuses on human health and body modification, using artful light to show when vitamin and stress levels are out of balance, without any needles, blood tests, or screens.

The organism combines skin friendly bacteria and green algae. The bacteria act like workers, sensing changes in sweat and skin fluid, such as drops in vitamins B12 or D and rises in the stress hormone cortisol and triggering specific glow responses. The green algae work like solar-powered cells, capturing light and providing energy and color so the system can stay active on the skin with minimal external input.

On the body, BioCue appears as a thin, glowing tattoo-like film that settles into the skin and grows into soft, organic shapes. Most of the time it looks subtle, but when it senses a deficiency or high stress it turns into clear patterns. Each pattern acts as a visual cue, turning internal health states into easy to read signals.

The diagram illustrates the components of the BioCue living tattoo. On the left, there is a 3D molecular model of the BtuB receptor. To its right is a table with seven rows, each detailing a component: Stress sensor (Glucocorticoid Receptor), B12 sensor (BtuB Receptor), Vitamin D sensor (VDR Receptor), Glow (GFP / Luciferase), Skin Adhesion (FimH), Energy (Rubisco), and Pattern Control (LuxR / LuxI). The last three rows are grouped together on the right side of the table, which also features a large, glowing green organic shape representing the tattoo pattern. Labels for the BtuB receptor and Glucocorticoid receptor are placed near their respective components.

Protein & Function	Role	Condition	Color & Pattern
Stress sensor: Glucocorticoid Receptor	detects cortisol	High Cortisol	Green Glowing Mandala Pattern
B12 sensor: BtuB Receptor	binds B12	Low	Yellow Glowing Spirals
Vitamin D sensor: VDR Receptor	binds Vitamin D	Low	Blue Glowing Waves
Glow: GFP / Luciferase	creates light		
Skin Adhesion: FimH	attaches to skin		
Energy: Rubisco	uses sunlight		
Pattern Control: LuxR / LuxI	Coordinates cells		

Bacteria use a system called quorum sensing - group chat for microbes.

They send and receive chemical messages:  
LuxI = makes a signal molecule (message)  
LuxR = receives the message (listener)

Design the genes so that:  
Some cells turn ON glow  
Others turn OFF glow  
Some respond faster  
Some respond slower  
And they are constantly sending LuxI signals to neighbors.

This creates reaction, diffusion systems (the same math that makes zebra stripes and seashell spirals).

Signal spreads outward, cells respond in loops, light appears in organized shapes

This produces natural patterns. So the tattoo is not pre-drawn, it grows its own patterns