

Medibotics IP Portfolio for Biometric Wearable Devices (e.g. Smart Rings)
and Nutritional Intake Monitoring (* indicates particularly relevant to smart rings): 6/5/2025

Patent or Application		Comments:
Patents:		
	U.S. patent 11754542 "Systems for Nutritional Monitoring and Management"	Smart watch with a camera and spectroscopic sensor for imaging and analyzing food
*	U.S. patent 11478158 "Wearable Ring of Optical Biometric Sensors"	Biometric smart ring with actuators which adjust the distances between light emitters and light receivers to change the regions or depths of tissue scanned. Published application 20200000345 cited by USPTO examiner in three rejections (4/3/2024, 9/28/2024, and 3/31/2025) of Oura Ring application 17/855,283.
	U.S. patent 10772559 "Wearable Food Consumption Monitor"	Camera on an ear-worn device which is triggered to record food images based on wrist motion
*	U.S. patent 10607507 "Arcuate Wearable Device with a Circumferential or Annular Array of Spectroscopic Sensors for Measuring Hydration Level"	Includes a wide variety of sensor designs which can be used for smart rings or watches. Designs include: compressible undulations or inflatable chambers on inner circumference to adjust size and/or fit; adjustable light emitter angles and locations to scan different tissue regions or depths; light emitters and receivers around entire ring circumference to control for unintentional rotation; circle of light emitters around a light receiver; and split ring resonator for electromagnetic sensing. Issued claims cover a smart watch for measuring hydration level using a plurality of optical sensor sets connected by flexible sections.
*	U.S. patent 10627861 "Wearable Device for the Arm with Close-Fitting Biometric Sensors"	Includes a wide variety of sensor designs which can be used for smart rings or watches. Designs include: compressible undulations or inflatable chambers on inner circumference to adjust size and/or fit; adjustable light emitter angles and locations to scan different tissue regions or depths; and light emitters and receivers around entire ring circumference to control for unintentional rotation. Issued claims cover a smart watch with a rotating light emitter, wherein the angle at which light is emitted can be adjusted to scan different tissue regions or depths.
	U.S. patent 10458845 "Mobile Device for Food Identification and Quantification using Spectroscopy and Imaging"	Handheld and/or wearable devices for recording food images and spectroscopic analysis of food.
*	U.S. patent 10314492 "Wearable Spectroscopic Sensor to Measure Food Consumption Based on Interaction Between Light and the Human Body"	Includes a wide variety of sensor designs which can be used for smart rings or watches. Designs include: compressible undulations or inflatable chambers on inner circumference to adjust size and/or fit; and adjustable light emitter angles and locations to scan different tissue regions or depths. Issued claims cover a smart watch with optical sensors on (six) inward undulations.

	U.S. patent 9442100 "Caloric Intake Measuring System using Spectroscopic and 3D Imaging Analysis"	Wearable system with camera, microphone, and vibrating or sound-emitting component to monitor and modify a person's eating behavior.
*	U.S. patent 9254099 "Smart Watch and Food-Imaging Member for Monitoring Food Consumption"	Claims cover a finger ring with a camera and spectroscopic sensor for imaging and analyzing food.
	U.S. patent 9042596 "The Willpower Watch(TM) A Wearable Food Consumption Monitor"	Claims cover a smart watch with one or two cameras for recording food images when a person eats.
Allowed (Expected to Issue):		
*	U.S Publication 20250127439 "Biometric Wearable Device (e.g. Finger Ring or Smart Watch) with Optical Sensors and Scanning Light Beams"	Smart ring with an oscillating light emitter to scan finger tissue. Allowed claims for smart ring with light emitter on rotating ball to scan different tissue locations or depths.
*	U.S Publication 20240377316 "Nerd of the Rings (Smart Ring with Spectroscopic Sensors)"	Smart ring for biometric measurement using light emitters and light receivers. Allowed claims for adjustment of circumferential locations of light emitters.
Applications Under Review:		
*	U.S. Application 19221114 "Nerd of the Rings -- Smart Rings with Optical Sensors for Obtaining Biometric Information"	Includes a wide variety of designs for smart rings with optical sensors including: various mechanisms to adjust locations of light emitters and/or light receivers to scan different regions or depths of finger tissue; various mechanisms to adjust the size and fit of a smart ring; and smart rings with a plurality of movable micromirrors or waveguides.
*	U.S. Application 19044788 "Wearable Ring or Band with Close-Fitting Spectroscopic Sensors"	Includes designs for smart rings with optical sensors including: mechanisms to adjust locations of light emitters and/or light receivers to scan different regions or depths of finger tissue; mechanisms to adjust the size and fit of a smart ring; and smart rings with movable micromirrors.
	U.S. Application 19008398 "Eyewear with EEG Sensors for Monitoring Food Consumption"	Eyeglasses or other head-worn devices with EEG sensors and a camera to detect eating and record food images.
	U.S. Application 19008344 "Eyewear with Eating-Activated Camera for Monitoring Food Consumption"	Eyeglasses or other head-worn devices with a camera which is triggered to record food when a wrist-worn motion sensor indicates that a person is eating.
*	U.S. Application 19002587 "Biometric Wearable Device (e.g. Finger Ring) with Radiowave or Microwave Energy Emitters/Transmitters"	Smart ring with a microwave emitter (and split ring resonator) for measuring biometric parameters.
	U.S. Application 19002583 "Biometric Wearable Device (e.g. Smart Watch) with Radiowave or Microwave Energy Emitters/Transmitters"	Smart watch with a microwave emitter (and split ring resonator) for measuring biometric parameters.

*	U.S Publication 20250134381 "Biometric Wearable Device (e.g. Finger Ring or Smart Watch) with Optical Sensors and Body-Facing Protrusions"	Smart ring with light emitters and/or light detectors on inward-facing protrusions or undulations.
*	U.S Publication 20250049346 "Automatically Tracking One's Food Consumption Using the "Jedi Mind Trick" Hand Motion"	A smart ring or watch with a camera and a motion sensor which is triggered to record food images when the wearer waves their hand over the food.
*	U.S Publication 20250000365 "Wearable Device with a Circular or Polygonal Array of Light Emitters and Light Receivers to Measure Biometric Parameters":	Wearable device (such as a smart ring) with a circular or polygonal array of light emitters around a light receiver and/or a light barrier between light emitters and a light receiver.
	U.S Publication 20240265826 "Detecting Unhealthy Food and Using Tactile and/or Haptic Sensations to Reduce a Person's Consumption of the Unhealthy Food":	Device or system to monitor a person's food consumption and modify the person's eating behavior using tactile and/or haptic sensations.

Expired or Abandoned Patents or Applications
Provisional 63279773 "The Willpower Watch (TM) -- A Wearable Food Consumption Monitor"
Provisional 63171838 "Smart Glasses for Monitoring Food Consumption"
Provisional 63112196 "Wearable Biometric Devices with Multiple Sets of Optical Sensors Which Span the Circumference of a Wrist or Finger (duplicate*)"
Provisional 62930013 "*Wearable Biometric Devices with Multiple Sets of Optical Sensors Which Span Most of the Circumference of a Wrist or Finger"
Provisional 62814713 "Wearable Devices with Arrays of Light Emitters and Light Receivers for Spectroscopy-Based Noninvasive Glucose Monitoring"
Provisional 62814692 "Wearable Technology with Spectroscopic Sensors for Noninvasive Monitoring of Glucose Levels"
Provisional 62800478 "Devices and Methods to Help Monitor Nutritional Intake"
Provisional 62549587 "Wearable Band with a Circumferential Array of Sequentially-Activated Light Emitters for Biometric Measurement"
Provisional 62439147 "Arcuate Wearable Device for Measuring Body Hydration and/or Glucose Level"
Provisional 62349277 "Glucowear [TM] System for Monitoring and Managing Intra-body Glucose Levels"
Provisional 62311462 "Glucowear [TM] Automated Closed-Loop System for Glycemic Control"
Provisional 62245311 "Wearable Device for the Arm with Close-Fitting Biometric Sensors"
Provisional 61825010 "Smart Watch and Food Utensil for Monitoring Food Consumption"
Provisional 61825008 "Smart Watch and Human-to-Computer Interface for Monitoring Food Consumption"
Provisional 61825007 "Smart Watch and Food-Imaging Member for Monitoring Food Consumption"
Provisional 61813780 "Smart Watch that Measures Food Consumption"
Patent 9536449 "Smart Watch and Food Utensil for Monitoring Food Consumption"
Patent 9529385 "Smart Watch and Human-to-Computer Interface for Monitoring Food Consumption"
Application 20230335253 "Devices, Systems, and Methods, including Augmented Reality (AR) Eyewear, for Estimating Food Consumption and Providing Nutritional Coaching"
Application 20220415476 "Wearable Device and System for Nutritional Intake Monitoring and Management"
Application 20210249116 "Smart Glasses and Wearable Systems for Measuring Food Consumption"
Application 20200042036 "Wearable Device with Automatic and Temporary Sensor-Activated Band Contraction"
Application 20170164878 "Wearable Technology for Non-Invasive Glucose Monitoring"
Application 20160317060 "Finger Ring with Electromagnetic Energy Sensor for Monitoring Food Consumption"
Application 20160143582 "Wearable Food Consumption Monitor"
Application 20160140870 "Hand-Held Spectroscopic Sensor with Light-Projected Fiducial..."
Application 20160120474 "Wearable Device for the Ear with Electroencephalographic and Spectroscopic Sensors"
Application 20160112684 "Spectroscopic Finger Ring for Compositional... Food or Other Env"
Application 20160034764 "Wearable Imaging Member and Spectroscopic Optical Sensor for Food Identification and Nutrition Modification"
Application 20160012749 "Eyewear System for Monitoring and Modifying Nutritional Intake"
Application 20150379238 "Wearable Imaging Device for Monitoring Food Consumption Using Gesture Recognition"
Application 20150126873 "Wearable Spectroscopy Sensor to Measure Food Consumption"
Application 20140350353 "Wearable Imaging Device for Monitoring Food Consumption using Gesture Recognition"
Application 20140081578 "Interactive Voluntary and Involuntary Caloric Intake Monitor"