

CLAIMS:

1. A system for quantifying a health capacity of a biological system, comprising:
at least one sensor configured to measure an emergent factor of the biological system and generate measured data based on the emergent factor; and
a processing system comprising a processor and an interface for receiving the measured data from the at least one sensor and determining one or more factors that quantify the health capacity of the biological system based on the measured data.
2. The system of Claim 1, wherein the processor computes a solution for maximizing the health capacity of the biological system according to machine readable instructions.
3. The system of Claim 2, wherein the biological system is a human.
4. The system of Claim 1, further comprising a storage component in communication with the processing system and for storing the measured data.
5. The system of Claim 1, wherein the measured data is a energy budget of the biological system.
6. The system of Claim 1, wherein processing system comprises a plurality of transmitters configured to transmit the measured data as data streams optimized with respect to properties of the at least one sensor and the emergent factors to be reported.
7. The system of Claim 6, wherein the processor makes pre-symptomatic detection of a disease state of the biological system based on the health metrics, according to machine readable instructions.
8. The system of Claim 7, wherein the processor makes pre-symptomatic detection of the disease state of the biological system using a supervised learning algorithm according to machine readable instructions with a collection of health metrics reported from a plurality of other objects.
9. The system of Claim 8, wherein the disease state is selected from aging, sepsis, cardiovascular disease, and infectious disease.
10. The system of Claim 1, wherein the at least one sensor comprises a plurality of wearable devices for sensing data comprising at least one of heat flux data, calorimetry data, osmometry data, and physiometry data.
11. The system of Claim 1, wherein the at least one sensor is an implanted device.

12. The system of Claim 1, wherein the interface transmits the measured data via wireless communication.

13. The system of Claim 1, wherein the processing system further comprises:
an application program interface that controls storage of the measured data, access to the measured data, security configurations, user inputs, and output of any results.

14. A system for quantifying a health capacity of a biological system, comprising:
a plurality of measuring devices, wherein at least one measuring device measures a thermodynamic property of the biological system.

15. The system of Claim 13, wherein the output includes a solution for intercepting a disease state.

16. A system for quantifying and improving a metabolic status of a human, comprising:

at least one wearable thermodynamic sensor configured to:

measure an emergent factor of the human, wherein the emergent factor is the temporal alignment of heat production and heat elimination of the human, the temporal alignment relating to the circadian rhythm of the human, and

based on the emergent factor, generate measured data comprising heat flux data over time; and

a processing system comprising a processor and an interface, the processing system configured to:

receive the measured data from the at least one wearable thermodynamic sensor,

based on the measured data, quantify a metabolic status of the human relating to the heat production and heat elimination,

based on the measured data, determine one or more stimuli that influence the metabolic status of the human,

compute a solution for maximizing the metabolic status of the human, and

generate and output at least one indicator for improving the metabolic status of the human by modulating the heat production and heat elimination of the human.

17. The system of Claim 16, wherein quantifying a metabolic status of the human is based on determining the mean, variance, min and/or max of the heat production and/or heat elimination over at least one circadian cycle.

18. The system of Claim 16, wherein quantifying a metabolic status of the human is based on determining the inter-day stability and/or intraday variability of the heat production and/or heat elimination over at least one circadian cycle.

19. The system of Claim 16, wherein quantifying a metabolic status of the human is based on comparing the mean, variance, min and/or max of the heat production and/or heat elimination over a particular circadian cycle to the historical value for the human.

20. The system of Claim 16, wherein quantifying a metabolic status of the human is based on comparing the inter-day stability and/or intraday variability of the heat production and/or heat elimination over a particular circadian cycle to the historical value for the human.