THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1) A neuromodulation system for treating a condition, the system including:
   a) electrodes configured to be attached to a subject; and,
   b) a signal generator electrically connected to the electrodes, the signal generator being configured to generate at least one therapy signal that is applied to the subject via the electrodes to thereby modulate the nerve, and wherein the at least one therapy signal includes at least one sequence of different types of waveforms.
2) A neuromodulation system according to claim 1, wherein the at least one sequence of different types of waveforms includes:
   a) a single repeating sequence of different types of waveforms;
   b) multiple different sequences of waveforms; and,
   c) multiple repeating different sequences of waveforms.
3) A neuromodulation system according to claim 1 or 2, wherein the at least one sequence of different types of waveforms is at least one of selected and adjusted based on at least one of:
   a) a cardiovascular disease being treated;
   b) an autonomic dysfunction being treated;
   c) a responsiveness to treatment;
   d) biofeedback; and,
   e) user input.
4) A neuromodulation system according to any one of claims 1 to 3, wherein the types of waveforms include at least one of:
   a) a rectangular pulse waveform;
   b) a triangular pulse waveform;
   c) a spike waveform;
   d) a sine waveform;
   e) a ramp waveform;
   f) an exponential ramp waveform;
   g) an exponential decay waveform;
   h) a burst waveform;
   i) an arbitrary waveform;

j) a premodulated waveform;
k) a linear waveform;
l) an increasing or decreasing, zeta waveform;
m) an increasing or decreasing sawtooth waveform;
n) a direct current waveform;
o) a damped sine waveform;
p) a bi-sigmoidal waveform;
q) a complex waveform;
r) a pulse waveform;
s) a square waveform;
t) a random noise waveform;
u) a custom waveform;
v) a differential waveform; and,
w) a rest.

5) A neuromodulation system according to any one of claims 1 to 4, wherein the at least one therapy signal is triggered by at least one of:
a) a user input;
b) a sensor input;
c) an electrical signal;
d) a bioelectric signal;
e) a movement of the subject;
f) an audio signal;
g) a vibration; and,
h) a physiological state of the subject.

6) A neuromodulation system according to any one of claims 1 to 5, wherein the at least one therapy signal at least one of:
a) are symmetrical;
b) are asymmetrical;
c) are monophasic;
d) are bi-phasic;
e) are tri-phasic;

f) are poly-phasic; and,

g) include multiple phases with at least one interspersed dwell.

7) A neuromodulation system according to any one of claims 1 to 6, wherein the sequence of different types of waveforms includes at least a time interval between the different types of waveforms.

8) A neuromodulation system according to claim 7, wherein the time interval is at least one of:

a) variable;

b) fixed;

c) 0 μs;

d) 0 μs to 200000 μs;

e) 200 μs to 2000 μs;

f) 100 μs to 500 μs;

g) at least one of selected and adjusted based on at least one of:

i) a cardiovascular disease being treated;

ii) an autonomic dysfunction being treated;

iii) a responsiveness to treatment;

iv) biofeedback; and,

v) user input.

9) A neuromodulation system according to any one of claims 1 to 8, wherein the sequence of different types of waveforms repeats, with a dwell time between each repeat.

10) A neuromodulation system according to claim 9, wherein the dwell time is at least one of:

a) variable;

b) fixed;

c) 0 μs;

d) 1 μs to 10000 μs;

e) 10000 μs to 10000000 μs;

f) approximately 50000 μs; and,

g) at least one of selected and adjusted based on at least one of:

i) a cardiovascular disease being treated;

ii) an autonomic dysfunction being treated;

iii) a responsiveness to treatment;

iv) biofeedback; and,

v) user input.

11) A neuromodulation system according to any one of claims 1 to 10, wherein at least one of:

a) a magnitude of at least one of the different types of waveforms is at least one of:

i) variable;

ii) fixed;

iii) at least one of selected and adjusted based on at least one of:

(1) a cardiovascular disease being treated;

(2) an autonomic dysfunction being treated;

(3) a responsiveness to treatment;

(4) biofeedback; and,

(5) user input; and,

b) relative magnitudes of the waveforms in the sequence of different types of waveforms are at least one of:

i) variable;

ii) fixed;

iii) at least one of selected and adjusted based on at least one of:

(1) a cardiovascular disease being treated;

(2) an autonomic dysfunction being treated;

(3) a responsiveness to treatment;

(4) biofeedback; and,

(5) user input.

12) A neuromodulation system according to any one of claims 1 to 11, wherein at least one of:

a) a duration of each waveform in the sequence of waveforms is at least one of:

i) variable;

ii) fixed;

iii) 1 μs to 20000 μs;

iv) 200 μs to 500 μs; and,

v) at least one of selected and adjusted based on at least one of:

(1) a cardiovascular disease being treated;

(2) an autonomic dysfunction being treated;

(3) a responsiveness to treatment;

(4) biofeedback; and,

(5) user input; and,

b) relative durations of the waveforms in the sequence of different types of waveforms are at least one of:

i) variable;

ii) fixed;

iii) at least one of selected and adjusted based on at least one of:

(1) a cardiovascular disease being treated;

(2) an autonomic dysfunction being treated;

(3) a responsiveness to treatment;

(4) biofeedback; and,

(5) user input.

13) A neuromodulation system according to any one of claims 1 to 12, wherein the sequence of different types of waveforms includes a first waveform followed by a second waveform.

14) A neuromodulation system according to claim 13, wherein at least one of:

a) the first waveform has a longer duration than the second waveform;

b) the first waveform has a shorter duration than the second waveform;

c) the first waveform has the same duration as the second waveform;

d) the first waveform has a greater magnitude than the second waveform;

e) the first waveform has a lesser magnitude than the second waveform; and,

f) the first waveform has the same magnitude as the second waveform.

15) A neuromodulation system according to any one of claims 1 to 14, wherein the sequence of different types of waveforms includes a rectangular pulse waveform and an exponential ramp waveform.

16) A neuromodulation system according to any one of claims 1 to 15, wherein the sequence of different types of waveforms includes a rectangular pulse waveform at a subthreshold, a spike waveform and an exponential decay waveform.

17) A neuromodulation system according to claim 15 or 16, wherein the rectangular pulse waveform is a pre-pulse at a subthreshold, wherein the subthreshold is at least one of:

a) less than a threshold;
b) larger than 0% and less than 100% of a threshold;
c) between 50% and 70% of a threshold;
d) approximately 60% of a threshold; and,
e) approximately 50% of a threshold.

18) A neuromodulation system according to any one of claims 1 to 17, wherein the nerve modulation system is configured to stimulate the nerve to modulate at least one of:
a) a presence, absence or concentration of an inflammatory biomarker;
b) an electrocardiographic biomarker;
c) a temperature;
d) a blood oxygen level;
e) a heart rate;
f) a heart rate variability;
g) an impedance; and,
h) a galvanic skin response.

19) A neuromodulation system according to any one of claims 1 to 18, wherein the condition includes at least one of:
a) cardiovascular disease, including at least one of:
i) a cardiovascular disease with an inflammatory phenotype;
ii) a coronary heart disease;
iii) a cerebrovascular disease;
iv) a peripheral arterial disease;
v) a rheumatic heart disease;
vi) a congenital heart disease;
vii) an ischemic heart disease;
viii) an arrhythmia;
ix) atrial fibrillation;
x) hypertension;
xi) heart failure with reduced ejection fraction;
xii) acute heart failure;
xiii) heart failure with mildly reduced ejection fraction;

xiv) heart failure with preserved ejection fraction;

xv) diastolic dysfunction;

xvi) postural orthostatic tachycardia syndrome;

xvii) myocardial infarction; and,

xviii) stroke;

b) chronic fatigue;

c) long COVID;

d) rheumatoid arthritis;

e) autonomic nervous system dysfunction;

f) dysautonomia;

g) mental health disorders;

h) inflammatory disorders;

i) autoimmune disorders;

j) cognitive dysfunction;

k) post viral syndromes including long COVID;

l) pain disorders;

m) stress including acute stress and chronic stress;

n) post traumatic stress disorder;

o) systemic lupus erythematosus;

p) diabetes; and,

q) cancer.

20) A neuromodulation system according to any one of claims 1 to 19, wherein the system enhances at least one of:

a) concomitant therapy delivery;

b) cognition;

c) memory;

d) mobility;

e) physical performance;

f) recovery after physical activity;

g) sleep quality; and,

h) divergent thinking.

21) A neuromodulation system according to any one of claims 1 to 20, wherein the nerve is at least one of:
    a) a cranial nerve including at least one of Cranial nerve I to XII;
    b) a vagus nerve, including at least one of:
        i) an auricular branch;
        ii) a cervical branch;
        iii) an efferent branch; and,
        iv) an afferent branch;
    c) a central neural nerve; and,
    d) a peripheral nerve, including at least one of:
        i) a median nerve; and,
        ii) a radial nerve.

22) A neuromodulation system according to any one of claims 1 to 21, wherein the signal generator modulates the nerve including modulating at least one target of the nerve.

23) A neuromodulation system according to any one of claims 1 to 22, wherein the at least one target of the nerve includes:
    a) an auricular branch of the nerve;
    b) a cervical branch of the nerve;
    c) a radial branch of the nerve;
    d) a specific neural fibres;
    e) efferent fibres;
    f) afferent fibres;
    g) A-alpha (Aα) fibres;
    h) A-beta (Aβ) fibres;
    i) A-delta (Aδ) fibres;
    j) B fibres including at least a myelinated B fibres; and,
    k) C fibres.