CLAIMS:

1. Microwave energy, for the manufacture of a medicament for modulating the expression of one or more genes.

2. The use of claim 1, wherein the microwave energy is provided by a system or microwave generating apparatus comprising:

a microwave generator;

a controller configured to control the microwave generator to generate microwave energy having a selected operational frequency or range of frequencies;

a microwave energy conduit cable configured to deliver the microwave energy to a microwave antenna extending from or coupled to a distal end of the microwave energy conduit cable; and

a microwave antenna.

3. The use of claim 2, wherein the microwave system or microwave generating apparatus is used to deliver or administer microwave energy to; a tissue, a biopsy, a diseased tissue a diseased epithelial tissue; epithelial tissue, simple squamous epithelium, simple cuboidal epithelium, simple columnar epithelium, pseudostratified epithelium, stratified squamous epithelium, non-keratinized, keratinized, stratified cuboidal epithelium, stratified columnar epithelium, transitional epithelium or germinal simple squamous-to-cuboidal epithelium.

4. The use of any claim 1, wherein the microwave energy is used at a frequency of:
between about 300 MHz and about 300 GHz; or
between about 900 MHz and about 200 GHz; or
between about 900 MHz and about 15GHz; or
about 14GHz; or
about 13GHz; or
about 12GHz; or
about 11GHz; or
about 10GHz; or
about 9GHz; or
about 7.5GHz to about 8.5GHz; or
about 8.5GHz; or
about 8GHz; or
about 7.5GHz; or

about 7GHz; or
about 6 GHz; or
about 5.8 GHz; or
about 2.45 GHz.

5. The use claim 4, wherein the microwave energy is used for about 1-5s, or for about 2-8s, or for about 3-10s, for about 1s, for about 2s, for about 5 s, for about 10 s, for about 30 s, for about 60 s, for about 2 min, for about 5 min or for about 10 min.

6. The use of claims 4-5, wherein the microwave energy is used at a very low energy level energy, or at 10-50J, or at 30-80J or at 50J-100J.

7. The use of claim s 4-6, wherein the microwave energy is used at 0.1W to 50W, about 1W, about 2W, about 5W, about 8W, about 10W, about 15W, about 20W, about 25W, about 30W or about 40W.

8. The use of claims 4-7, wherein the microwave energy is used at a plurality of different powers and/or wherein the microwave energy is used at different powers and adjusted between different powers in increments of 0.1W.

9. The use of any one of claims 1-8, wherein the microwave energy is used as a repeat dose or wherein the microwave energy is used as 2, 5, 10 or 15 individual doses of microwave energy.

10. The use of any preceding claim, wherein the use is an *in vitro* use and/or the microwave energy is applied or administered to a tissue or biopsy *in vitro*.

11. The use of any preceding claim, wherein the microwave energy is used to raise the temperature in the tissue from a first temperature to a second temperature.

12. The use of any one of claim 11, wherein the second temperature may not reach 60 °C, or wherein the microwave energy is be used to raise the temperature in a tissue from about 37 °C to about 59 °C or wherein the second temperature is maintained for a period of time, for anywhere between about 1s and 30 min, for about 1 min, for about 5 min, for about 10 min, for about 15 min, for about 20 min or for about 25 min or wherein temperature of the tissue is

raised from a first temperature equal to the temperature of the tissue before application of any microwave based treatment to a second temperature of about 43 °C.

13. The use of any one of claims 11-12, wherein the microwave energy is used at 20W for 10 s to raise the temperature of the tissue from a first temperature to a second temperature, optionally wherein the second temperature is 43 °C and the second temperature is maintained using microwave energy at 2W.

14. The use of any preceding claim, wherein the medicament is for use in the treatment or prevention of an inflammatory condition or a disease or condition which is caused by and/or associated with:
downregulated expression of the KIT gene; and/or
downregulated expression of the BAD gene; and/or
downregulated expression of the ID4 gene; and/or
downregulated expression of the RUNX1T1 gene; and/or
downregulated expression of the AKT3 gene; and/or
upregulated expression of the IL8 gene; and/or
upregulated expression of the SOCS3 gene; and/or
upregulated expression of the EGR1 gene; and/or
upregulated expression of the CD79A gene; and/or
upregulated expression of the IL1B gene; and/or
upregulated expression of the TNFRSF13C gene; and/or
upregulated expression of the GADD45B gene; and/or
upregulated expression of the Notch3 gene; and/or
upregulated expression of the CCND2 gene; and/or
upregulated expression of the WNT5A gene.

15. An *in vitro* method of modulating gene expression in a tissue, said method comprising exposing the tissue to microwave energy and at a dose sufficient to modulate the expression of the relevant gene.

16. The method of any one of claim 15, wherein the tissue is provided by or obtained from a subject suffering from or susceptible/predisposed to, a disease or condition which is caused by and/or associated with, the aberrant expression of one or more of:
the IL8 gene; and/or
the SOCS3 gene; and/or

the EGR1 gene; and/or
the CD79A gene; and/or
the IL1B gene; and/or
the TNFRSF13C gene.

17. An *in vitro* method of upregulating the expression of one or more of the following gene(s):
the KIT gene; and/or
the BAD gene; and/or
the ID4 gene; and/or
the RUNX1T1 gene; and/or
the AKT3 gene;
said method comprising exposing the relevant gene to microwave energy.

18. An *in vitro* method of down-regulating the expression of one or more of the following gene(s):
the IL8 gene; and/or
the SOCS 3 gene; and/or
the EGR1 gene; and/or
the CD79A gene; and/or
the IL1B gene; and/or
the TNFRSF13C gene; and/or
the GADD45B gene; and/or
the Notch3 gene; and/or
the CCND2 gene; and/or
the WNT5A gene;
said method comprising exposing the relevant gene to microwave energy.

19. The methods of claims 17 or 18, wherein the method(s) is/are applied to a tissue or to an isolated tissue sample.

20. An *in vitro* method of modulating:
the PI3K pathway; and/or
the RAS pathway; and/or
the MAPK pathway; and/or
the Notch pathway; and/or

the Wnt pathway; and/or

the Transcriptional Regulation (KEGG) pathway; and/or

the JAK/STAT pathway; and/or

the TGF-B pathway; and/or

the Hedgehog pathway;

said method comprising exposing the pathway to microwave energy at a dose sufficient to modulate the expression of the relevant pathway.