

CLAIMS

What is claimed is:

1. A method for meat production by in vitro cell culture, comprising:
isolating tissue from an animal or plant source and making a cell
5 suspension of cells;
introducing culture medium comprising growth factor of (i) genetically
same or similar species to the cells and/or (ii) genetically same genus to the
cells; and
growing the cells on a food-grade scaffold in a culture medium, the cells
10 growing into a solid or semi-solid structure that mimics an animal organ.
2. The method of claim 1, wherein isolating the tissue comprises isolating organ
tissue from a fish.
3. The method of claim 1, further comprising the step of increasing expression of a
protein in the growing cells by altering a level of one or more micro RNAs that regulate
15 the expression of the protein.
4. The method of claim 2, wherein the organ tissue is derived from fish swim
bladder of a fish from the Osteichthyes class.
5. The method of claim 3, wherein the protein is collagen.
6. The method of claim 3, wherein the micro RNAs are one or both of micro RNA21
20 (miR-21) and micro RNA 29a (miR-29a).
7. A method for meat production by in vitro cell culture, comprising:
isolating tissue from an animal or plant source and making a cell
suspension of cells;
growing the cells on a food-grade scaffold in a culture medium, the cells
25 growing into a solid or semi-solid structure that mimics an animal organ; and
co-culturing the cells with bioengineered cells that secrete nutrients,
growth factors, and cytokines that support the growth of the cells, wherein the
bioengineered cells is (i) genetically same or similar species to the cells and/or
(ii) genetically same genus to the cells.
- 30 8. The method of claim 7, wherein isolating the tissue comprises isolating organ
tissue from a fish.
9. The method of claim 8, wherein the organ tissue is derived from fish swim
bladder of a fish from the Osteichthyes class.