What is claimed is:

1. A process of forming a polymer fiber by hydrodynamic spinning, comprising:

forcing a plurality of fluids to flow through a conduit and to form a laminar flow comprising three or more layers of generally coaxial fluid flows, said fluid flows flowing at respective flow rates through said conduit selected to define a cross-section of a tubular middle layer of said fluid flows, said middle layer comprising a cross-linkable polymer precursor, another layer of said fluid flows comprising a cross-linking agent;

wherein substantial diffusion of said polymer precursor away from said middle layer is prevented but a portion of said cross-linking agent is allowed to diffuse from said another layer into said middle layer to facilitate cross-linking of said polymer precursor in said middle layer to form a tubular polymer layer in a polymer fiber, by selecting said polymer precursor, said cross-linking agent, and said fluids and controlling said fluid flows, said polymer layer having a cross-section generally corresponding to said cross-section of said middle layer.

2. The process of claim 1, comprising adjusting said flow rates through said conduit to change said cross-section of said tubular middle layer.

3. The process of claim 2, wherein said adjusting comprises adjusting said flow rates during said forcing.

4. The process of claim 2, wherein said adjusting said flow rates comprises adjusting a ratio of said flow rates.

5. The process of claim 1, wherein said another layer comprises a tubular outer layer of said fluid flows.

6. The process of claim 1, wherein said another layer comprises an inner layer of said fluid flows, and said polymer fiber is tubular.

7. The process of claim 6, wherein said polymer fiber has an inner diameter of about 20 μm or larger and an outer diameter of about 60 μm or larger.

8. The process of claim 1, wherein a generally cylindrical inner layer of said fluid flows comprises said polymer precursor, and said polymer fiber is generally cylindrical.

9. The process of claim 8, wherein said polymer fiber has a diameter of about 20 μm or larger.

10. The process of claim 1, wherein said middle layer comprises a plurality of middle layers, and said polymer fiber comprises a plurality of polymer layers.

11. The process of claim 1, wherein said cross-linking agent comprises a cross-linker, and said polymer layer comprises a polymer formed by cross-linking said polymer precursor with said cross-linker.

12. The process of claim 1, wherein said cross-linking agent comprises a cross-linking initiator.

13. The process of claim 1, wherein said cross-linking agent comprises a cross-linking catalyst.

14. The process of claim 1, comprising solidifying said polymer fiber.

15. The process of claim 1, comprising immersing said polymer fiber in a liquid bath after said polymer fiber has exited said conduit.

16. The process of claim 1, comprising dispersing a cell in said laminar flow so that said polymer fiber comprises said cell.

17. The process of claim 1, comprising dispersing cells in a plurality of said layers of said laminar flow so that a plurality of layers in said polymer fiber comprise cells.

18. The process of claim 17, wherein said cells are dispersed in said laminar flow such that different layers of said polymer fiber comprise different types of cells.

19. The process of claim 17, wherein said cells are dispersed in said laminar flow such that different layers of said polymer fiber comprise different concentrations of cells.

20. The process of claim 1, wherein one or more of said fluids comprises a cell culture medium.

21. The process of claim 1, wherein one or more of said fluids comprises phosphate buffered saline.

22. The process of claim 1, wherein said polymer precursor comprises gelatin-hydroxyphenylpropionic acid, calcium alginate, or polysulfone.

23. The process of claim 1, wherein said cross-linking agent comprises hydrogen peroxide.

24. The process of claim 23, wherein said middle layer of said fluid flows comprises horseradish peroxidase.

25. The process of claim 1, comprising initiating said cross-linking in said middle layer.

What is claimed is:

1. A process of forming a polymer fiber by hydrodynamic spinning, comprising:

forcing a plurality of fluids to flow through a conduit and to form a laminar flow comprising three or more layers of generally coaxial fluid flows, said fluid flows flowing at respective flow rates through said conduit selected to define a cross-section of a tubular middle layer of said fluid flows, said middle layer comprising a cross-linkable polymer precursor, another layer of said fluid flows comprising a cross-linking agent;

wherein ~~said polymer precursor, said cross-linking agent, and said fluids are selected to prevent~~ substantial diffusion of said polymer precursor away from said middle layer ~~, and to~~ is prevented but a portion of said cross-linking agent is allowed ~~a portion of said cross-linking agent~~ to diffuse from said another layer into said middle layer to facilitate cross-linking of said polymer precursor in said middle layer to form a tubular polymer layer in a polymer fiber, by selecting said polymer precursor, said cross-linking agent, and said fluids and controlling said fluid flows, said polymer layer having a cross-section generally corresponding to said cross-section of said middle layer.

2. The process of claim 1, comprising adjusting said flow rates through said conduit to change said cross-section of said tubular middle layer.

3. The process of claim 2, wherein said adjusting comprises adjusting said flow rates during said forcing.

4. The process of claim 2 ~~or claim 3~~, wherein said adjusting said flow rates comprises adjusting a ratio of said flow rates.

5. The process of ~~any one of~~ claims 1 ~~to 4~~, wherein said another layer comprises a tubular outer layer of said fluid flows.

6. The process of ~~any one of~~ claims 1 ~~to 5~~, wherein said another layer comprises an inner layer of said fluid flows, and said polymer fiber is tubular.

7. The process of claim 6, wherein said polymer fiber has an inner diameter of about 20 μm or larger and an outer diameter of about 60 μm or larger.

8. The process of ~~any one of~~ claims ~~1 to 5~~, wherein a generally cylindrical inner layer of said fluid flows comprises said polymer precursor, and said polymer fiber is generally cylindrical.

9. The process of claim 8, wherein said polymer fiber has a diameter of about 20 μm or larger.

10. The process of ~~any one of~~ claims ~~1 to 9~~, wherein said middle layer comprises a plurality of middle layers, and said polymer fiber comprises a plurality of polymer layers.

11. The process of ~~any one of~~ claims ~~1 to 10~~, wherein said cross-linking agent comprises a cross-linker, and said polymer layer comprises a polymer formed by cross-linking said polymer precursor with said cross-linker.

12. The process of ~~any one of~~ claims ~~1 to 11~~, wherein said cross-linking agent comprises a cross-linking initiator.

13. The process of ~~any one of~~ claims ~~1 to 12~~, wherein said cross-linking agent comprises a cross-linking catalyst.

14. The process of ~~any one of~~ claims ~~1 to 13~~, comprising solidifying said polymer fiber.

15. The process of ~~any one of~~ claims ~~1 to 14~~, comprising immersing said polymer fiber in a liquid bath after said polymer fiber has exited said conduit.

16. The process of ~~any one of~~ claims ~~1 to 15~~, comprising dispersing a cell in said laminar flow so that said polymer fiber comprises said cell.

17. The process of ~~any one of~~ claims ~~1 to 16~~, comprising dispersing cells in a plurality of said layers of said laminar flow so that a plurality of layers in said polymer fiber comprise cells.

18. The process of claim 17, wherein said cells are dispersed in said laminar flow such that different layers of said polymer fiber comprise different types of cells.

19. The process of claim 17 ~~or claim 18~~, wherein said cells are dispersed in said laminar flow such that different layers of said polymer fiber comprise different concentrations of cells.

20. The process of ~~any one of~~ claim~~s~~ 1 ~~to 19~~, wherein one or more of said fluids comprises a cell culture medium.

21. The process of ~~any one of~~ claim~~s~~ 1 ~~to 20~~, wherein one or more of said fluids comprises phosphate buffered saline.

22. The process of ~~any one of~~ claim~~s~~ 1 ~~to 21~~, wherein said polymer precursor comprises gelatin-hydroxyphenylpropionic acid, calcium alginate, or polysulfone.

23. The process of ~~any one of~~ claim~~s~~ 1 ~~to 22~~, wherein said cross-linking agent comprises hydrogen peroxide.

24. The process of claim 23, wherein said middle layer of said fluid flows comprises horseradish peroxidase.

25. The process of ~~any one of~~ claim~~s~~ 1 ~~to 24~~, comprising initiating said cross-linking in said middle layer.