WHAT IS CLAIMED IS:

1. Apparatus for casting an electrophoresis slab gel, said apparatus comprising:

a gel enclosure defining a slab-shaped cavity with an open side, said gel enclosure comprising first and second flat plastic plates and means for securing said plates together with a gap of preselected width between said plastic plates, and

removable means for maintaining said preselected width against pressure generated inside said cavity when a slab gel is retained in said cavity and exerts an outward force against said plastic plates.

2. The apparatus of claim 1 wherein said removable means for maintaining said preselected width comprise an outer enclosure removably placed around said gel enclosure and contacting outer surfaces of said plastic plates, said outer enclosure having substantially greater rigidity than said plastic plates of said gel enclosure.

3. The apparatus of claim 1 wherein said removable means for maintaining said preselected width comprise an outer enclosure that accommodates a stack of said gel enclosures while contacting outer surfaces of outermost plastic plates of said stack, said outer enclosure having substantially greater rigidity than said plastic plates of said gel enclosure.

4. The apparatus of claims 1 or 2 wherein said outer enclosure is a shrink wrap.

5. The apparatus of claims 1 or 2 wherein said outer enclosure is a rigid box.

6. The apparatus of claim 1 further comprising a well-forming insert comprising a flat bar having a longitudinal edge and a row of dentiform projections along said longitudinal edge, said projections sized to fit inside said slab-shaped cavity.

7. Apparatus for casting an electrophoresis slab gel, said apparatus comprising:

a gel enclosure defining a rectangular slab-shaped cavity with opposing upper and lower edges and opposing side edges, said gel enclosure comprising first and second flat

plastic plates and means for securing said plates together along said side edges of said cavity with a gap of preselected width between said plastic plates, and

means on or attachable to said gel enclosure for holding said plastic plates immobile along said upper edge and thereby maintaining said preselected width along said upper edge upon exposure to pressure generated inside said cavity when a slab gel resides in said cavity and exerts an outward force against said plastic plates.

8. The apparatus of claim 7 further comprising a well-forming insert comprising a flat bar having a longitudinal edge and a row of dentiform projections along said longitudinal edge, said projections sized to fit inside said slab-shaped cavity.

9. The apparatus of claim 8 wherein said flat bar has a forward face and a rear face and said means for holding said plastic plates immobile along said upper edge comprise first hook means projecting forward from said forward face and second hook means projecting rearward from said rear face, said first and second hook means shaped to hook over said first and second plastic plates, respectively.

10. The apparatus of claim 8 wherein said means for holding said plastic plates immobile along said upper edge comprise an attachment removably joinable to said well-forming insert, said attachment comprising first and second hook means oriented such that when said attachment is joined to said well-forming insert, said first hook means hooks over said first plastic plate and said second hook means hooks over said second plastic plate.

11. The apparatus of claims 9 or 10 wherein one of said first hook means and said second hook means is a row of tabs parallel to said row of dentiform projections.

12. The apparatus of claims 9 or 10 wherein said first hook means is a first row of tabs parallel to said row of dentiform projections and said second hook means is a second row of tabs parallel to said row of dentiform projections.

13. The apparatus of claims 9 or 10 wherein said first and second plastic plates have upper edges, and when said first and second plastic plates are vertical, said upper edge of said second plastic plate is higher than said upper edge of said first plastic plate, and said second hook means is higher than said first hook means.

14. The apparatus of claim 8 wherein said means for holding said plastic plates immobile along said upper edge comprise a first protrusion on one of said well-forming insert and said plates and a first recess on the other of said well-forming insert and said plates at a location facing said protrusion and having a profile complementary to that of said first protrusion, and a second said protrusion and second said recess of complementary profiles, said first protrusion and recess securing one side of said well-forming insert to one of said plastic plates, and said second protrusion and recess securing an opposing side of said well-forming insert to the other of said plastic plates.

15. The apparatus of claim 9 wherein said protrusions are ridges and said recesses are grooves, all having trapezoidal profiles.

16. A device for insertion between a pair of parallel flat casting plates to form a row of sample wells in an electrophoresis slab gel as said gel is cast between said plates, said device comprising:

a flat bar having a forward face, a rear face, and a longitudinal edge,

a row of dentiform projections along said longitudinal edge,

first hook means projecting forward from said forward face, and

second hook means projecting rearward from said rear face, said first and second hook means shaped to hold said casting plates parallel to each other and at a fixed distance from each other with said dentiform projections between said casting plates.

17. The device of claim 16 wherein one of said first hook means and said second hook means is a row of tabs parallel to and uniformly spaced from said forward face.

18. The device of claim 16 wherein said first hook means is a first row of tabs parallel to and uniformly spaced from said forward face, and said second hook means is a second row of tabs parallel to and uniformly spaced from said rear face.

19. The device of claim 16 wherein, when said forward and rear faces are vertical, said second hook means is higher than said first hook means.

20. A method for casting a slab gel with sample wells for electrophoresis, said method comprising:

(a) placing a gel-forming monomer solution in a slab-shaped cavity having an open side, said cavity being in an enclosure comprising first and second flat plastic plates with a gap of preselected width between said plastic plates;

(b) polymerizing said monomer solution to form said gel; and

(c) either during or after (b), imposing a force on said plastic plates to oppose any outward force against said plastic plates caused by pressure generated inside said cavity by a slab monomer solution or said gel.

21. The method of claim **20** wherein step (c) comprises placing said gel enclosure in an outer enclosure that contacts outer surfaces of said plastic plates and that is substantially more rigid than said plastic plates.

22. The method of claim **20** wherein step (c) comprises placing a stack of said gel enclosures in an outer enclosure that contacts outer surfaces of outermost plastic plates of said stack and that is substantially more rigid than said plastic plates.

23. The method of claims **21** or **22** wherein said outer enclosure is a shrink wrap.

24. The method of claims **21** or **22** wherein said outer enclosure is a rigid box.

25. The method of claim **20** wherein step (c) comprises engaging said plastic plates at locations on outer surfaces of said plastic plates adjacent to said open side of said cavity.

26. The method of claim **20** further comprising inserting a well-forming insert in said open side of said slab-shaped cavity, prior to step (b), said well-forming insert comprising a flat bar having a longitudinal edge and a row of dentiform projections along said longitudinal edge, said projections sized to fit inside said slab-shaped cavity.

27. The method of claim **26** wherein said flat bar has a forward face, a rear face, first hook means projecting forward from said forward face, and second hook means projecting rearward from said rear face, and step (c) comprises inserting said well-forming insert with said first hook means hooking over said first plastic plate and said second hook hooking over said second plastic plate.

28. The method of claim 26 wherein said flat bar has a forward face, a rear face, a first protrusion on one of said forward face and said plates and a first recess on the other of said forward face and said plates at a location facing said first protrusion and having a profile that interlocks with said first protrusion, and a second said protrusion on one of said rear face and said plates and a second said recess on the other of said rear face and said plates at a location facing said second protrusion and having a profile that interlocks with said second protrusion.

29. The method of claim 26 further comprising joining an attachment to said well-forming insert, said attachment comprising first and second hook means oriented such that when said well-forming insert is so inserted, said first hook means hooks over said first plastic plate and said second hook means hooks over said second plastic plate.

30. A method for casting a slab gel with sample wells for electrophoresis, said method comprising:

(a) placing a gel-forming monomer solution in a slab-shaped cavity having an open side, said cavity being in an enclosure comprising first and second flat plastic plates with a gap of preselected width between said plastic plates;

(b) polymerizing said monomer solution to form said gel; and

(c) either during or after (b), imposing a subatmospheric pressure on said cavity and sealing said enclosure to maintain said subatmospheric pressure.

WHAT IS CLAIMED IS:

1. A device for insertion between a pair of parallel flat casting plates to form a row of sample wells in an electrophoresis slab gel as said gel is cast between said plates, said device comprising:

a flat bar having a forward face, a rear face, and a longitudinal edge,

a row of dentiform projections along said longitudinal edge,

one or more first hook(s) projecting forward from said forward face, and

one or more second hook(s) projecting rearward from said rear face, said first and second hook(s) shaped to hold said casting plates parallel to each other and at a fixed distance from each other during expansion of the gel with said dentiform projections between said casting plates.

2. The device of claim 1 wherein one of said first hook(s) or said second hook(s) forms a row of tabs parallel to and uniformly spaced from a face of said flat bar.

3. The device of claim 1 wherein said first hook(s) forms a first row of tabs parallel to and uniformly spaced from said forward face, and said second hook(s) forms a second row of tabs parallel to and uniformly spaced from said rear face.

4. The device of claim 1 wherein, when said forward and rear faces are vertical, said second hook(s) is higher than said first hook(s).

5. A method for casting a slab gel with sample wells for electrophoresis, said method comprising:

(a) placing a gel-forming monomer solution in a rectangular slab-shaped cavity of a gel enclosure defining said cavity with opposing upper and lower edges and opposing side edges, said gel enclosure comprising first and second flat plastic plates and one or more dividers for securing said plates together along said side edges of said cavity with a gap of preselected width between said plastic plates;

(b) polymerizing said monomer solution to form said gel; and

(c) before, during, or after (b), attaching the device of claim 1 to said enclosure, thereby imposing a force on said plastic plates to oppose any outward force against said plastic plates caused by pressure generated inside said cavity by a slab monomer solution or said gel.