1 2% AGAROSE GEL

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Abbreviations: ec: end concentration

Material:

1. Gel Box (orange Box for Ethidium bromide, Biorad boxes otherwise)
2. 150ml 1x TAE-buffer without $MgCl_2$
3. 3g Agarose (for 2%-Agarose Gel)
4. 150ml glas with **broad** neck
5. $1650\mu l MgCl_2 of 1M$ (ec: 11mM)
6. $7\mu l$ Roti Gelstain
7. Gel comb
8. loading buffer **labbook**
9. 7 drops Ethidium bromide
10. 250 ml TAE-buffer with 11mM $MgCl_2$

Procedure:

Preparing the Gel

1. If ethidium bromide is used while pouring the gel, always take an orange gel box. Use Biorad boxes for other gel applications.
2. Close the gel box's gap at the edges with the small gum tubes. Pay attention if the gaps are completely closed. One can also use tape.
3. Put the prepared gel box into the holdfast. Hint: As it is difficult to put the box into the holdfast, one can water the gum tubes at the edges, so the gel box gently slips into the holdfast.
4. Weight 3g Agarose (Agarose behind the scale next to the hood). Therefore use the spatulas next to the scale. Make sure that the agarose'S density is $1\frac{g}{cm^3}$.
5. Put the Agarose into a glas (with a mark at 150ml) with a broad neck. This avoids overflowing of the Agarose liquid in the microwave.
6. Add 150 ml 1xTAE-buffer **without** $MgCl_2$.
7. Heat the liquid in the microwave (600W, 1:30 min). Take the glas out of the microwave with the plastic insulator (white glove on the microwave) and carefully pivot.

8. Repeat the last step and after 1:30 min begin to pivot the glas continuously while avoiding bubbles. If Agarose is completely dissolved it should be a clear and transparent liquid. (Hint: If there is no steam coming out of the glas anymore, than the gel cooled down to 70 °.

9. Add $1650\mu l of 1M MgCl_2$ to get a end concentration of 11mM. Don't use the big pipette, add $825\mu l$ twice.

10. Add 7 *mul* Roti gelstain.

11. Pour the liquid into the prepared gel box. Try to avoid any air bubbles and remove the remaining ones with a pipette tip.

12. Insert the comb.

13. Let the gel dry for at least 30 min and put ice all around the gel box.

14. If the gel is dried it adopts an opaque color.

Preparing the samples

15. The ratio of loading buffer and end volume has to be 1:6. The gel has been loaded with the following samples:

- Scaffold pure:

1 *mul*	scaffold
9 *mul*	H2O
2 *mul*	loading buffer
$12\mu l$	

- Origami samples

$50\mu l$	Origami
$10\mu l$	loading buffer
60 *mul*	

- 1 kb DNA ladder from New England Biolabs

Continuing with the gel

16. Pour 1x TAE-buffer **with** 11mM $MgCl_2$ over the box and make sure that the gel is completely covered and the buffer does not get in contact with the surrounding ice.

17. Load the gel with the samples. Watch out that the samples do not come out of the gel pockets.

18. Connect the gel box with the power source. Thereby the plus pole should be in the flowing direction of the DNA.

19. Let the gel run with 65W for 3,5 h. Refill the ice if it is melted.

20. After 3,5 h carefully put the gel out of the box with the spatual. Don't touch anything of the gel with hands.

21. As the gel bands were hardly visible, the gel was treated with ethidium bromide additional.

22. Therefore put the gel into the box labelled with ehtidium bromide.

23. In this case there was no box. A new metal box was prepared by mixing 9 drops of Ethidium bromide and 150 ml 1x TAE-buffer with 11 mM $MgCl_2$.

24. The gel was put into the box and on the shaker for 30 min.

25. Afterwards the gel has to be washed in 170 ml 1x TAE-buffer with 11mM $MgCl_2$ for 10 min on the shaker.

26. Now the gel is ready for the UV-Box.