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Washington. Attempts to improve triple
balancer strains.

In attempting to improve the chromosomal integrity of triple balancers we have tried the following combinations: 1) Basc/Basc;SM1/Pm;P88/TM1
2) Ext/FM6;SM1/Pm;P88/Sb
3) Ext/FM6;SM1/Pm;P88/TM2
4) FM7a/FM7a;SM1/Tg;TM6/Sb

P88 designates Ins(3LR)P88, In(3R)C,D³ bx^{34e} e, an intermediate stage in the development of an improved third chromosome balancer by E.B. Lewis. TM6 designates E.B. Lewis's original TM6, to which he has added the excellent marker Ubx^{P15}. In combination 1) Basc, not unexpectedly, broke down too frequently to be useful. Combination 2) had extremely low productivity and some breakdown of P88, and so was discarded. Combination 3) was lost because of extremely low fecundity and viability; many pupae in the final crosses and in the stock failed to emerge. Combination 4), though somewhat better, was lost after several generations because of generally poor productivity. The schedules we used are available for anyone who would like to have them. Special thanks are due to Prof. E.B. Lewis for providing us with the intermediate stage and the improved form of TM6. (Aided by funds from the State of Washington Initiative Measure No. 171 for the Support of Biological and Medical Research.)

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University of Oregon, Eugene. Electro-
phoretic separation and detection of
non-enzymatic proteins from single flies.

Although enzymes can be readily separated and detected in homogenates of single flies by standard electrophoretic techniques (e.g. Dickinson, 1971), detection of proteins from single flies using standard disc gel electrophoresis has not been feasible. So to detect non-enzym-

atic proteins, gels have been made in capillaries (Grossbach, 1965; Ward et al., 1970). These methods have required the use of a pair of expensive micromanipulators to form the stacking gel (Grossbach, 1965), or have involved a specially made apparatus to remove the gel from the tube (Ward et al., 1970). We have developed a simple procedure for capillary disc gel electrophoresis that avoids these problems and provides protein bands from a single ovary from a single fly.

Twenty-microliter Wiretrol[®] (Drummond Scientific Co.) capillaries are filled completely with the desired resolving gel (such as used by Jovin et al., 1964) and are allowed to polymerize. Since de-gassing seems to help prevent bubbles from occurring in the gels, the gel solution without catalyst solution is aspirated five to ten minutes in a 25-milliliter filter flask. The catalyst solution is then added and the solution is allowed to aspirate a few more minutes. The gel solution is then introduced into the tube by capillary action.

After the resolving gel has polymerized, the gel is pushed from the bottom of the capillary by the Wiretrol[®] plunger until a small length (ca. 3mm) of gel protrudes from the top. The protruding end is then cut off flat with a razor blade, and then pushed back into the tube by air pressure supplied by a 100 cc syringe fitted with an 18 gauge needle and connected to the top of the capillary by a length of polyethylene tubing (i.d. 0.047 in Intramedic[®] by Clay Adams). If the gel is pushed back down 5 mm, this allows about three microliters total for the stacking gel and sample.

The stacking gel is applied immediately with a small pipette made by drawing out a 100-microliter Microcap[®] (Drummond) until it is about 100 μ O.D.). In our experience, a third to a half of the remaining space should be filled with stacking gel (one to one and one half microliters). After the stacking gel has polymerized, the sample and tracking dye can be applied using a micropipette.

The gels can then be run on a conventional disc electrophoresis apparatus (e.g. Canalco Model 1200), the only adaptation needed being to use the gum rubber plugs from the bulb dispenser that comes in a Microcap[®] package as an insert within the usual grommets in order to accommodate the small diameter of the capillaries.

The gels are run at 0.2 ma per gel and are removed from the tube by use of the Wiretrol plunger. They can then be stained with Coomassie Blue stain in 5:5:1 methanol:water:acetic acid, and destained in the same solution without the dye.

This method seems to work well with Acrylamide gels of about 4-5% with SDS, but successful runs have been done with 7.5% gels and without SDS. Higher percentage gels may form bubbles and adhere more strongly to the capillary wall, as do gels that have been allowed to stand for more than 3 hours. Both these problems are lessened by treating the capillaries