Perkins, D. D. Special purpose Neurospora stocks. Many stocks are now available for which there are specialized genetic applications. The descriptions of there, their uses, and the methods of employing them are widely scattered, and in some cases have not been published. Listings in the FGSC stock list ore necessarily according to genotype, and the potential uses of many stocks may not be obvious from their genotypes.

The object of this note is to call attention to the availability and potential usefulness of some stocks in categories with which wc have hod experience. Specific strains are listed under six main headings:

I. Linkage testers
II. Mating-type ond aberration testers
III. Stocks for testing heterokaryon compatibility at the het-c locus
IV. Stocks for replication
V. Autonomous oscospore-color mutants
VI. Reference strains for Neurospora species.

FGSC numbers are given for all stocks. A few key references are given, by code number if included in the Bachmann and Strickland (1965) or Bachmann (1970) bibliographies. In many cores more detailed references con be obtained from the FGSC stock list. Comments on some of the stocks ore gathered sequentially following the list, and the approximate mop locations of all markers are shown in a figure.

Other categories of special-purpose stocks hove been described and listed by other workers. Among these are the Wilson-Garnjobst series of stocks for testing het-c, -d, and -e in heterokaryons with forcing markers (Ref. XW70, listed in Port VI of the current FGSC stock list), the kit of stocks devised by Metzenberg and Ahlgren for introgressing genes between N. tetrasperma and N. crassa (listed in Ref. XM62; see also 1970 Genetics 68: 369). stocks that produce microconidia for plating (pe fl A and a, FGSC#867 and 868, Ref. B36. Also cr rg; pe fl A, FGSC#331, Ref. XC53), and stocks for selective enrichment of mutants (inos 89601, Ref. L53, and the temperature-sensitive inos, 83201t (Sullivan and DeBusk 1971 Neurospora Newsl. 18: 13.).

List of special-purpose Neurospora stocks

Category and genotype	FGSC#
I. Linkage testers	
A. olcoy testers: (Ref. XP28, pp. 249-252) T(I;II)4637 al-I; T(IV;V)R2355, cot-I; T(III;VI)1, ylo-1	
alcoy A:	997
alcoy a:	998
Follow-up testers for use with alcoy:	
our; pe A (I;II)	1203
aur; pe a	1204
aur; arg-5 A	1205
aur; atg-5 a	1204
cot-I; inos A (IV;V)	1243
cot-I; inos a	1244
tryp-1; ylo-1 A (III;VI)	1207
tryp-1; ylo-1 a	1208
aur; arg-5; cot-I; inos A	1885
aur; arg-5; *cat-* 1; *inos* a	1886
aur; erg-5; tryp-1; ylo-1 A	2124
our; arg-5; tryp-1; ylo-1 a	1888
tryp-1; cot-I; inos; ylo-1 A	1987
tryp-1; cot-I; inos; ylo-1 a	1988
B. *Multiply-marked centromere testers:* (Ref. Perkins NN#19	
bol; w-2; pdx; ot; ylo-1; wc	
multicent A:	2014
multicent a:	2015
acr-2; pdx; at; ylo-1; wc A	1985
ocr-2; pdx; at; ylo-1; wc a	1986

Category and genotype	FGSC#
C. **Testers for extremes of individual linkage groups:** (with or without intermediate markers)	
LG I. w-5 A al-1 R	2177
un-5 a al-1 R	2178
fr A al-I R	2087
fr a al-1 R	2088
LG II. col-10 tryp-3 A	2071
col-10 tryp-3 a	2072
LG 111. acr-2 dow A	2036
acr-2 dow a	2037
acr-2 tryp-1 dow A	2125
acr-2 tryp- 1 dow a	2126
LG IV. cyr-10 uvs-2 A	1989
cys-10 cot-I uvs-2 A	2017
cys-10 cot-I uvs-2 a	2018
LG V. at hirt-6 A	1991
at hist-6 a	1992
at al-3 hirt-6 A	2089
at al-3 hist-6 a	2090
LG VI. chol-2 tryp-2 A	1087
chol-2 tryp-2 a	1088
chol-2 ylo-1 tryp-2 A	209 1
chol-2 ylo-1 tryp-2 a	2092
LG VII. nit-3 wc sk A	2073
nit-3 wc sk a	2074
nit-3 wc arg-10 A	157

Category ond genotype	FGSC#	Reference
II. Mating-type and aberration tester		
fl^{P} A	1838	
fl^{P} a	1690	
III. Stocks for testing heterokaryon compatibility at the het-c locus. See list in Table 2 of Perkins NN# 19 "Presumed new alleles of het-c"; also XP26, XP27.		
IV. Stocks for replication.		
sn cr-1 A	2001	Perkins 1971
sn cr-1 a	2002	NN# 18:12.
rg cr-1 A	624	M33, Schroeder
rg cr-1 a	418	1970 M. G. G. 107: 291.
rg cr-1; pe fl A	331	
cr-1 A	487	
cr-1 a	488	
cot-1 A	75	R48, R52, Littlewood
cot-1 a	80	and Munkres 1972 J. Bacteriol. (June)

Category and genotype	FGSC#	Reference
V. Autonomous ascospore-color mutants. Landner 1971 Heredity 27: 385.		
asco a, A	405,210,	S152, XM58
ts A	821	XN3, N3, N5
ws-1 A, a	1434,, 1435	XP31, xP32
ws-2 a	1617	
bs A, a	1780, 1781	
pan-2 A	465	XT22, XT24
VI. Reference strains for Neurospora species.		
Neurospora crassa.		
74-OR23-1 A	987	XC17
74-0138-1 a	988	
fl^{P} A	1838	
fl^{P} a	1690	
Neurospora tetrasperma.		
85 A	1270	XH64, XH61
85 a	1271	
Neurospora sitophila.		
P8085 A	2216	D71, S89, Perkins 1972
P8086 a	2217	NN# 19.

Comments on specific stocks and their use.

1. A. alcoy testers hove the advantage of involving no nutritional markers and requiring no transfers to special test media. They ore capable of detecting linkage of most new mutants, but by no means all. alcoy markers in I, III, IV and V ore not near centromeres, and VII is unmarked.

   tyrp-1 (in follow-up stocks) can be scored without transfer, by UV-fluorescence, if grown on minimal + indole. un-5 was formerly called un(b39t).

   B. Multicent is more likely than alcoy to reveal linkage of genes in the left arms of groups I-V, and VII is marked. Multicent is especially useful for determining which linkage groups are involved in translocations. It can also be used for point mutants, ond is useful especially with temperature-sensitive mutants, for which alcoy is unsuitable because cot-1 is a marker.

   C. The most distal known markers in several arms are not practical to use because of problems of fertility, viability or scoring. Combinations of markers in there testers ore therefore often compromiser, and the markers used may not be terminal. See Ref. XP28, pp. 273-274, for summary of terminal markers.

   LG 1. Use only as fertilizing parent. R is female-sterile.
   LG II. tryp-3 grows well on tryptophan + phenylalanine.
   LG III. tryp-1 con be grown on minimal + indole and scored by UV-fluorescence.
   LG IV. cys-10 grows well on casein hydrolysate but poorly on methionine, so uvs-2 is scored on plates containing 3% agar + sorbose minimal + NZ-case, and drops of conidial suspension are spotted as described by Stadler and Smith (XS90).
   LG V. Use minimal + histidine, not complete, to ovoid inhibition of hist-6 on complete, and incidentally to maximize clarity of at scoring.
   LG VII. sk is female-sterile. For optimal growth of arg-10 use 0.5-1 mg arginine per ml.

III. By crossing T(IIL→VR)NM149 x Normal sequence, duplications ore obtained that cover the het-c locus. If the parents carry different het-c alleles, this is signalled by on abnormal phenotype in the heterozagous duplication progeny.

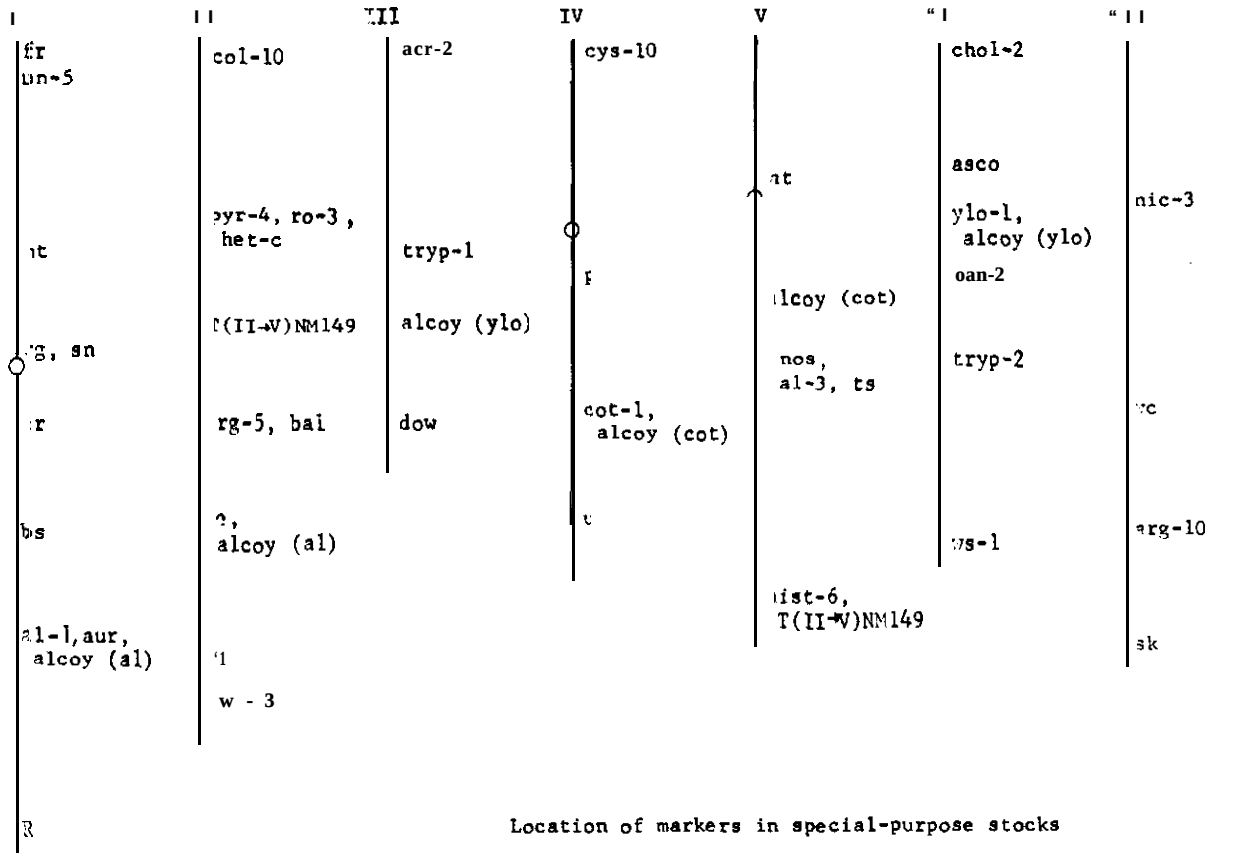
IV. All but rg cr ore homozygous fertile

V. Z-molar sucrose (XM58) or propylene glycol (Londner 1971 Heredity 27:385) are recommended as mounting fluids to prevent disruption of linear asci.

V. Use of pan-2 as a spore-color marker requires that pantothenate not be present in the crossing medium (XT22). Probably other classes of nutritional mutants could be used in a similar way. e.g., cys-3 and other cysteine mutants (XM109) (XM109).

VI. "Type" strains representing each of the described Neurospora species are needed for testing new isolates from nature. Because morphological variability within the same species is known to be great, corssability, fertility, and chromosome sequence are likely to be more valid criteria of biological relationships than are the predominantly morphological features on which descriptions of the established taxonomic species have been bored.

Oak Ridge wild-types, and fluffies derived from OR, are used as N. crassa standards in our laboratory. Other commonly used wild-types, e.g., Emerson or Lindegren, would be equally valid. The fl strains, being highly fertile and unencumbered with conidia, are ideal as protoperithecial parents in crosses with unknowns and in interspecific crosser.



Location of markers in special-purpose stocks

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