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# New chromosome rearrangements from conidia of Neurospora wild type OR23-1VA

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## Abstract

In experiments of Perkins, Kinsey, Asch and Frederick (1993 Genetics 134:729-736), new chromosome rearrangements were recovered with a frequency of 10% or more among mitotically stable transformants of am strains, whereas rearrangements were rare (< 1%) in cultures from untransformed regenerated protoplasts of the same strains.

# New chromosome rearrangements from conidia of Neurospora wild type OR23-1VA.

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In experiments of Perkins, Kinsey, Asch and Frederick (1993 Genetics 134:729-736), new chromosome rearrangements were recovered with a frequency of 10% or more among mitotically stable transformants of *am* strains, whereas rearrangements were rare (< 1%) in cultures from untransformed regenerated protoplasts of the same strains. Rearrangement frequencies have also been determined for Oak Ridge wild types, although these were not the strains used for transformation and were therefore not appropriate as controls. Isolates were examined from regenerated untransformed protoplasts or from unprotoplasted conidia, with the results shown in Table 1. Surprisingly, 14 translocations were found in 278 isolates (5%) in five experiments with strain OR23-1VA (FGSC 2489), which has been used for many years as a standard laboratory wild type. Several apparently spontaneous translocations have been recovered in progeny from OR23-1VA during this time, but there has been no reason to suspect instability of the magnitude observed here. The translocations isolated from OR23-1VA all have different breakpoints. Stocks of OR23-1VA from three different independently maintained sources were used in the various series.

In contrast, only one translocation was found in 520 isolates (0.2%) with the other untransformed strains that were tested. No rearrangement was detected in 57 regenerated protoplasts from ORS-6a (FGSC 2490), and none in 196 from strain QNS-6 *nit-2 leu-3 caf-1 at a* (FGSC 5381; described by Perkins et al. 1986 Genetics 114:791-817). Previously, when the same QNS-6 strain was crossed with several normal sequence strains, 714 single-ascospore cultures were tested without finding a single rearrangement (V. C. Pollard and Perkins, unpublished).

The Oak Ridge strain of *a* mating type, ORS-6a, is a product of 13 successive backcrosses to OR23-1VA or to its vegetative precursor OR23-1A (Newmeyer, Perkins, and Barry 1987 Fungal Genet. Newsl. 34:46-51). The OR *A* and *a* wild types should therefore be nearly isogenic (except for regions close to mating type), yet the *A* strain seems markedly more prone to rearrangement. The cause of instability in OR23-1VA is unknown.

**TABLE 1**

**Chromosome rearrangements recovered from single conidial isolates in the absence of transformation**

| Strain | Experiment | No. of isolates tested | No. of confirmed rearrangements | Rearrangements recovered |
|---|---|---|---|---|
| $am_6al^6a$ | UK17 | 122 | 1 | *T(I;VI)UK17-51* |
| $am_{132}int\ A$ | UK18 | 143 | 0 | |
| QNS-6 a | QNS | 198 | 0 | |
| ORS-6a | UK16 | 57 | 0 | |
| OR23-1VA | UK7 | 27 | 2 | *T(IIIR;VR)UK7-7 mei, T(V;VI)UK7-11* |
| " | UK8 | 36 | 2 | *T(IIR;IL)UK8-18, T(I;IV;VR)UK8-21,* |
| " | UK14 | 58 | 5 | *T(VIR→VL)UK14-1, T(I;VI)UK14-2,T(II;VR)UK14-3, T(III;IV;VII)UK14-5, T(I;II;VI)UK14-7* |
| " | UK15 | 57 | 2 | *T(I;V)UK15-1, T(VI;VII)UK15-2* |
| " | UK19 | 100 | 3 | *T(IV;VII)UK19-4, T(IL;VI)UK19-37, T(VI;VII)UK19-65* |

UK17 and UK18 are untransformed control experiments from Perkins, Kinsey, Asch, and Frederick (1993 Genetics 134:729-736). Tested cultures in all the experiments were derived from single untransformed, regenerated protoplasts except for experiment UK19, in which they were from untransformed, unprotoplasted single conidia. Cultures were purified by serial transfer. Breakpoints are different in the two I;VI translocations.


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