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- <sup>1</sup> Rodey, G. E., and Good, R. A., *Int. Arch. Allergy*, **36**, 399 (1969).
- <sup>2</sup> Greaves, M. F., Roitt, I. M., and Rose, M. E., *Nature*, **220**, 293 (1968).
- <sup>3</sup> Doenhoff, M. J., Davies, A. J. S., Leuchars, E., and Wallis, V., *Proc. Roy. Soc. London*, **B**, **176**, 69 (1970).
- <sup>4</sup> Owen, J. J. T., Hunter, P., and Raff, M. C., *Transplantation*, **12**, 231 (1971).
- <sup>5</sup> Jones, G., *Clin. Exp. Immunol.*, **12**, 391 (1972).
- <sup>6</sup> Kretschner, R., Say, B., Brown, D., and Rosen, F. S., *New Engl. J. Med.*, **279**, 1295 (1968).
- <sup>7</sup> Lischner, H. W., Dunnett, H. H., and DiGeorge, A. M., *Nature*, **214**, 580 (1967).
- <sup>8</sup> Harris, R., and Ukaejiofo, E. O., *Lancet*, **ii**, 327 (1969).
- <sup>9</sup> Crone, M., Koch, C., and Simonsen, M., *Transplant. Rev.*, **10**, 36 (1972).
- <sup>10</sup> Schlossman, S. F., and Hudson, L., *J. Immunol.*, **110**, 313 (1973).
- <sup>11</sup> Moller, G., *J. Exp. Med.*, **157**, 415 (1961).
- <sup>12</sup> Festerstein, H., *Lancet*, **i**, 182 (1968).
- <sup>13</sup> Biberfeld, P., Biberfeld, G., and Perlmann, P., *Exp. Cell Res.*, **66**, 177 (1971).
- <sup>14</sup> Thomas, D. B., and Phillips, B., *Clin. Exp. Immunol.* (in the press).
- <sup>15</sup> Greaves, M. F., and Bauminger, S., *Nature*, **235**, 55, 67 (1972).
- <sup>16</sup> Anderson, J., Edelman, G. M., Moller, G., and Sjoberg, O., *Eur. J. Immunol.*, **2**, 1972 (in the press).

## Chromosome Location of Genes Conditioning Stem Rust Resistance Transferred from Diploid to Hexaploid Wheat

A SURVEY of a large number of accessions of diploid wheat (*Triticum monococcum* L. and *T. boeoticum* Boiss.) revealed two potentially useful genes conditioning resistance to stem rust (*Puccinia graminis* Pers. f. sp. *tritici* Eriks. and E. Henn). The practical utilization of diploid resistance at higher levels of ploidy in breeding presents no technical problems. Vardy and Zohary<sup>1</sup> proposed the use of an interspecific triploid hybrid bridge to transfer rust resistance from diploid to tetraploid wheat. A resistant derivative from the cross *T. durum* cv. Spelmar<sup>2</sup> × *T. boeoticum* G21 was isolated, and its behaviour to stem rust studied by Gerechter-Amitai *et al.*<sup>3</sup>. In my study this tetraploid was backcrossed once to the hexaploid wheat cultivar Steinwedel, and two resistant lines were isolated and accessioned as W3588 and W3589 respectively. (W numbers refer to the Sydney University Wheat Accession Register).

A resistant hexaploid derivative W3591 was isolated from the cross (*T. aestivum* W1569 × *T. boeoticum* C68-123) × Chinese Spring, an interspecific triploid hybrid bridge was not necessary for this particular transference. Two additional resistant hexaploid lines were studied: W3534, Marquis<sup>5</sup> × (Stewart<sup>5</sup> × *T. monococcum* RL5244) F<sub>4</sub> (obtained from Drs. P. L. Dyck and E. R. Kerber, Canada), and W3586 (*T. durum* W304 × *T. monococcum* cv. Einkorn) × unknown *T. aestivum* F<sub>5</sub> (obtained from Dr. R. A. McIntosh, Australia).

On the basis of stem rust reactions these five lines were divided into two groups. The first group which included W3586, W3588, and W3591 was resistant to all Australian components of standard races 21, 34, and 126 of *P. graminis*, but susceptible to all components of standard races 15 and 17. The remaining lines, W3534 and W3589, which constituted the second group were resistant to all Australian strains.

Genetic and pathological tests showed that each of the five

lines possessed a single dominant gene derived from its diploid parent, and that the lines within each group possessed the same gene. Results of monosomic analyses confirmed this, and indicated that chromosome 2A was implicated in the three lines in the first group. Nullisomic F<sub>2</sub> segregants for chromosome 2A were susceptible, and at meiosis showed reduced chromosome pairing typical of nulli-2A plants<sup>6</sup>. The main differentiation provided by Einkorn in the standard stem rust differential set seems to be attributable to this gene. If so all components of standard races which are avirulent on Einkorn should be avirulent on these lines. This is supported by the observation that a single dominant gene controls avirulence in crosses between *P. graminis* cultures<sup>4,5</sup>. No previously identified gene conditioning stem rust reaction has been located on chromosome 2A; and so I propose that this gene be designated Sr21.

The gene present in the second group was located on chromosome 7A. F<sub>2</sub> telocentric mapping utilizing W3534 and telocentric chromosome 7AL of Chinese Spring showed that it is located on the long arm, and linkage of 0.27 ± 0.042 with the centromere was estimated. I propose this gene be designated Sr22. It is highly improbable that Sr22 is allelic with Sr15, because Sr15 is closely linked with Pml<sup>6</sup>, and Pml is independent of the 7A centromere<sup>7</sup>.

Results from further investigations to test other linkages will be published in detail at a later date.

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- <sup>1</sup> Vardi, A., and Zohary, D., *Heredity*, **22**, 541 (1967).
- <sup>2</sup> Gerechter-Amitai, Z. K., Wahl, I., Vardi, A., and Zohary, D., *Euphytica*, **20**, 281 (1971).
- <sup>3</sup> Sears, E. R., *Res. Bull. Miss. Agric. Exp. Sta.*, **572** (1954).
- <sup>4</sup> Johnson, T., *Can. J. Bot.*, **32**, 506 (1954).
- <sup>5</sup> Loegering, W. Q., and Powers, H. R., *Phytopathology*, **52**, 547 (1962).
- <sup>6</sup> Watson, I. A., and Luig, N. H., *Euphytica*, **15**, 239 (1966).
- <sup>7</sup> Sears, E. R., and Briggie, L. W., *Crop. Sci.*, **9**, 96 (1969).

## Erratum

IN the article "Induced Transmitter Release from Schwann Cells and its Suppression by Actinomycin D" (*Nature New Biology*, **241**, 85; 1973) the authors' names should appear in alphabetical order: S. Bevan, W. Grampp and R. Miledi.

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