

Meiosis and chromatin in intergeneric hybrid derivatives from the *Brassicaceae*

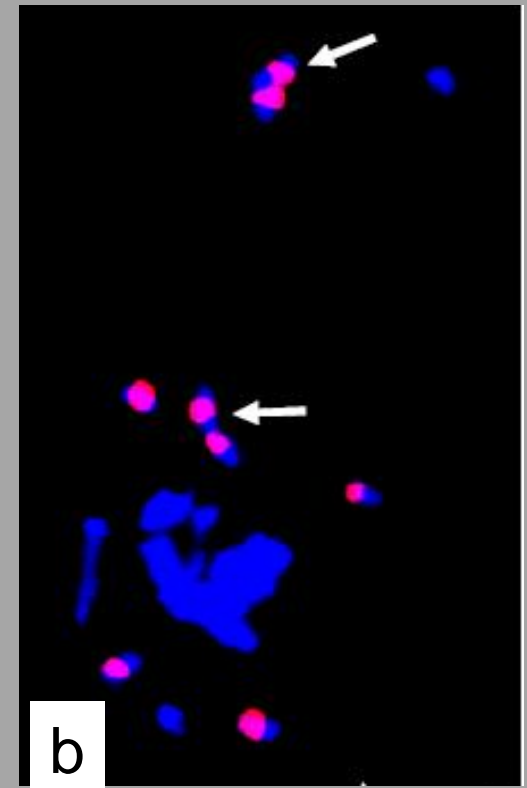
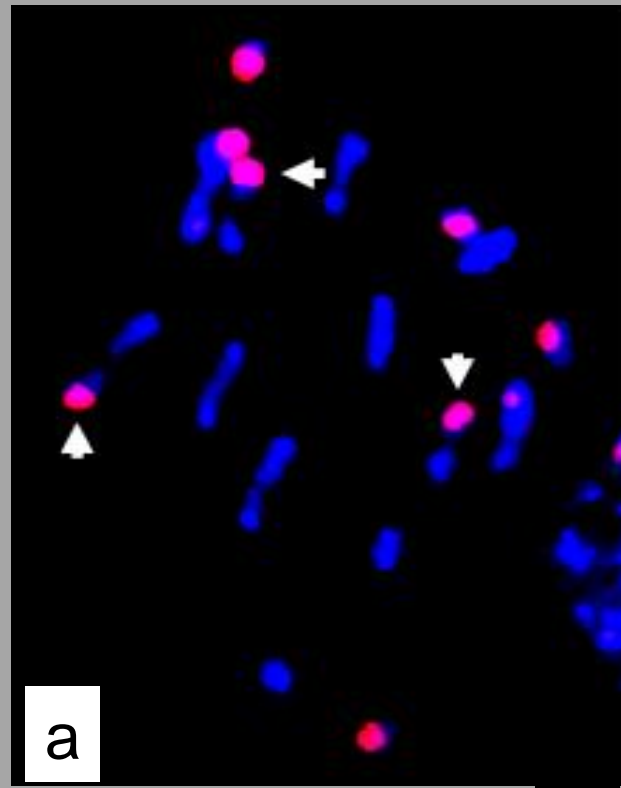
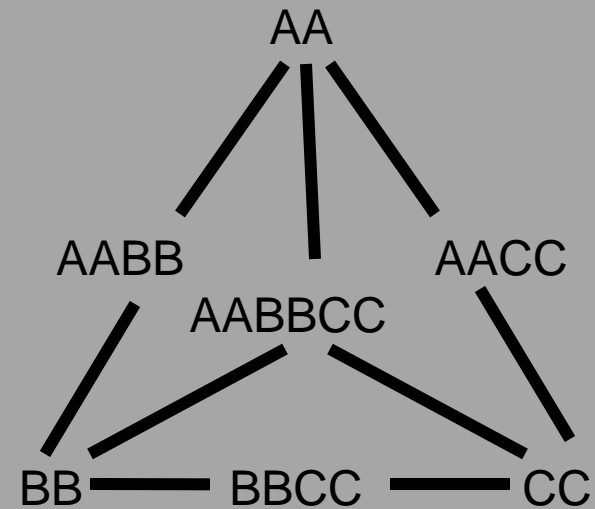
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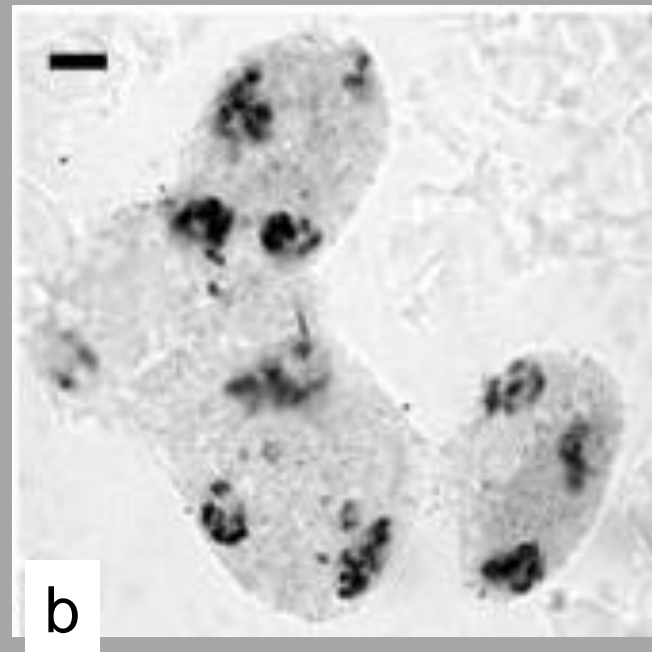
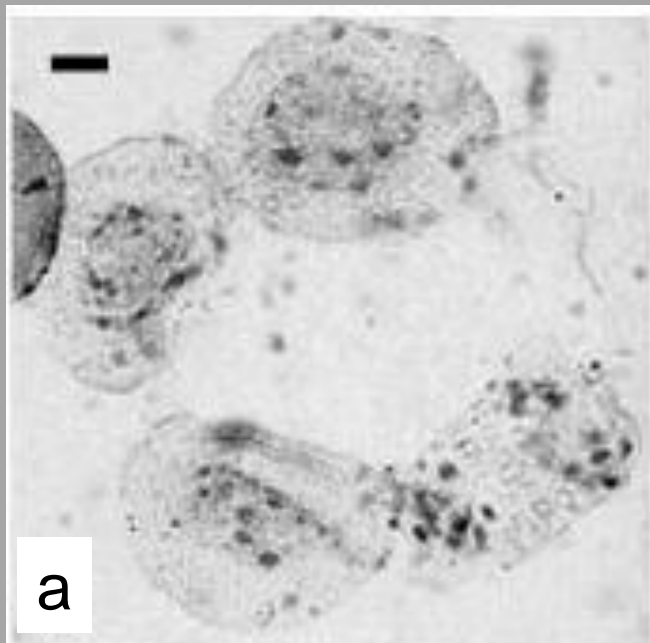


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Intra- and intergenomic homology of B genome chromosomes in trigenomic combinations of the cultivated *Brassica* species



**Microsporogenesis abnormality of hybrids between synthetic
Brassica hexaploid and *Orychophragmus violaceus***

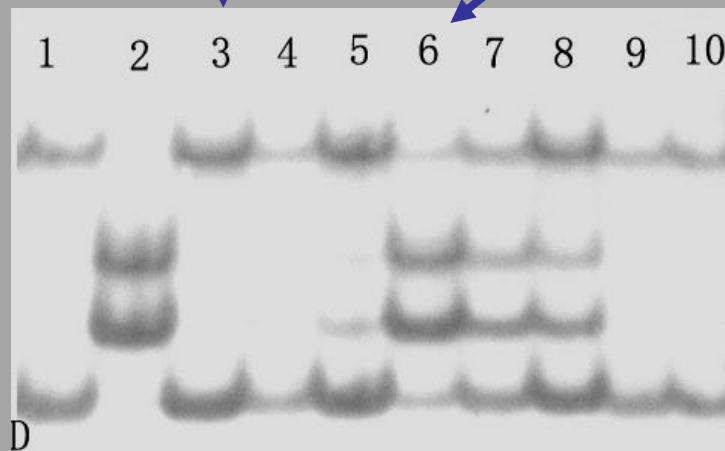
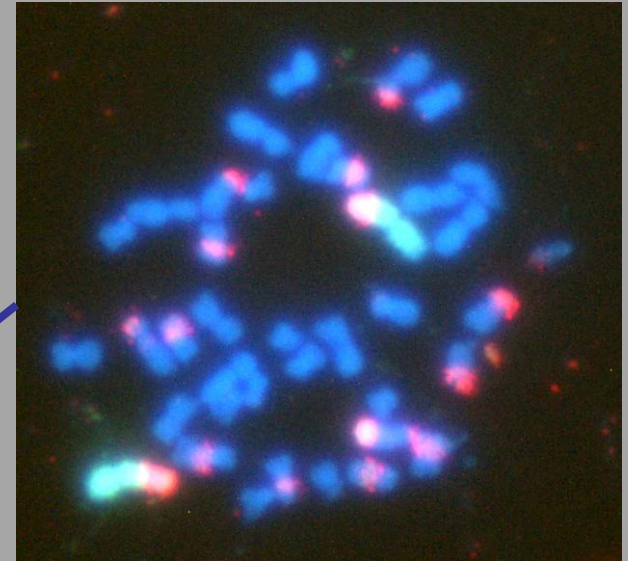


Chromosome stabilities and nucleolar dominance hybrids between synthetic *Brassica* hexaploids and *Orychophragmus*

B. nigra rRNA genes are still dominant in allohexaploids of different origins (*B. carinata* × *B. rapa* , natural and synthetic *B. napus* × *B. nigra*). The hierarchy of nucleolar dominance (B>A>C) was still valid.

Hybrids have chromosomes complements biased to *B. juncea* by losing all chromosomes from *O. violaceus* and majority of *B. oleracea*, and only express *B. nigra* rRNA genes.

Primary studies on meiosis and chromatin of *Brassica napus* – *Orychophragmus* addition lines



Green: *O. violaceus* genomic DNA
Red: 45S rDNA

cDNA-SSCP analysis of rRNA
gene expression

1: *B. napus*; 2: *O. violaceus*

3-10: eight different addition plants

Primary studies on meiosis and chromatin of *Brassica napus* – *Orychophragmus* addition lines



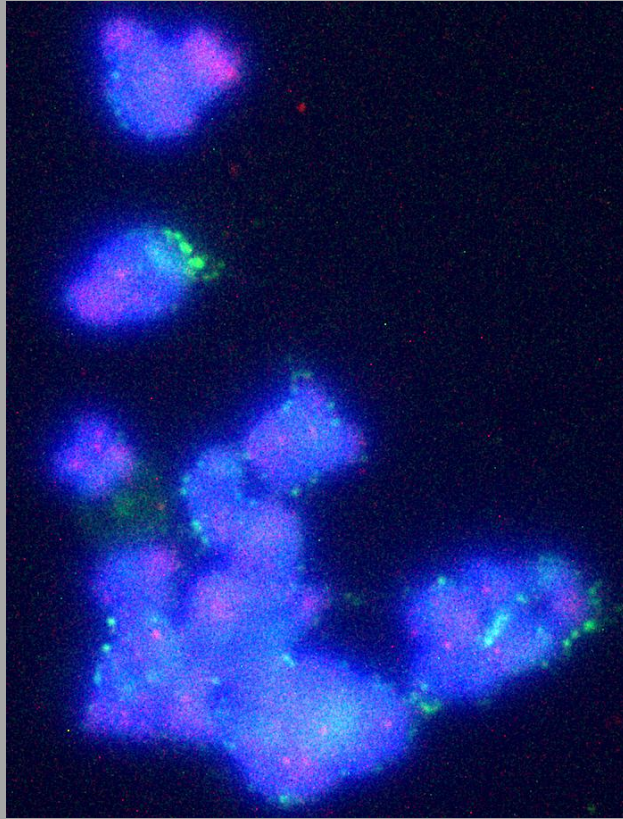
The addition-lines are perfect for investigating the differences and interactions between the two genomes

Spreads of the synaptonemal complex during the prophase of meiosis are ideal for studies of chromosome pairing, recombination and chromatin modification

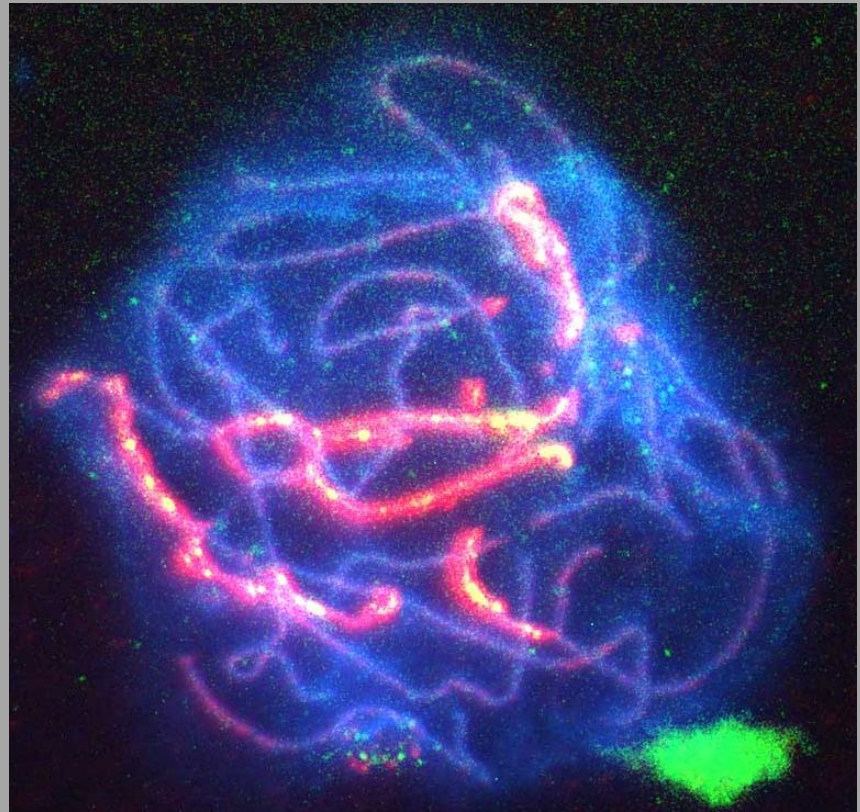
Antibodies under study

- Antibody to ZYP1 and ASY1 (They acts at the interface between the developing chromosome axes and the recombination machinery)
- Anti-5-methyl cytosine
- Anti-monomethyl-Histone H4 (Lys20)
- Anti-trimethyl-Histone H3 (Lys9)
- Anti-trimethyl-Histone H3 (Lys27)
- Anti-dimethyl-Histone H3 (Lys4)
- Anti-dimethyl-Histone H3 (Lys9)
- Antibody to H2A phosphorylation (an earliest responses to induced double-strand breaks (DSBs))
- Antibody to Sumo1 and Sumo2/3 (Small ubiquitin-related modifiers (SUMOs) are ~100 amino acid proteins that are posttranslationally and covalently conjugated to other proteins)

Primary studies on meiosis and chromatin of *Brassica napus* – *Orychophragmus* addition lines



Metaphase chromosomes and immunostaining with H3k4me2 (red) and anti-m5C (green)



SC spread and immunostaining with ASY1 (red) and γ H2AX (green)

ASY1: thanks to Chris Franklin /Sue Armstrong & colleagues



Thank you!



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