

***SOLANUM BULBOCASTANUM* (+) *S. TUBEROSUM* SOMATIC HYBRIDS:
CHARACTERIZATION OF NUCLEAR AND CYTOPLASMIC GENOMES**

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Somatic hybridization was performed to introgress useful traits from the wild incongruent species *Solanum bulbocastanum* ($2n=2x=24$) into potato genome. Selection of somatic hybrids among regenerated shoots was carried out using ISSR markers, which allowed the identification of 11 *S. bulbocastanum* (+) *S. tuberosum* hybrids. Cytological observations revealed the recovering of seven tetraploid, three hexaploid and one 49-chromosome somatic hybrids. Multicolor GISH analysis was carried out to highlight the genomic dosage of the parental species in five somatic hybrids. The procedure here used was effective in discriminating parental genomes since chromosomes were unambiguously colored. Two tetraploid somatic hybrids showed the expected 2:2 cultivated to wild genomic dosage. Two hexaploids revealed a 4:2 cultivated to wild genomic dosage, and one hexaploid had a 2:4 cultivated to wild genomic dosage. Most hybrids flowered profusely, however all crosses with *S. tuberosum* genotypes failed. Microsporogenesis analysis revealed the presence of multivalent formation, supporting the occurrence of intergenomic recombination between homeologous chromosomes. Characterization of hybrid cytoplasmic genomes was performed using gene specific primers that detected polymorphisms between the fusion parents in the intergenic regions. The analysis showed that most hybrids inherited the plastidial and mitochondrial DNA from *S. tuberosum*. A few hybrids with a rearranged mitochondrial genome were also detected. Alternatives to backcross approach for the exploitation of these somatic hybrids for potato breeding will be discussed.