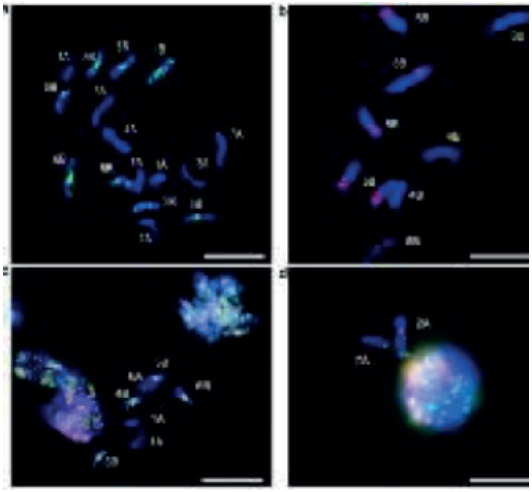
NACE CODE A01

INVESTIGATING GENETIC DIFFORMITY IN PLANTS AND ANIMALS BY MEANS OF MOLECULAR CYTOGENETIC VARIABILITY

Innovations and Benefits - The new ENEA technique of FISHIS (Fluorescence In Situ Hybridization In Suspension) allows the fast labelling of nuclei and chromosomes in suspension. The use of fluorescent molecular probes coupled with flow cytometry and cell sorting makes FISHIS a powerfull tool for characterization and manipulation of specific genetic materials and for identification and isolation of cytogenetic variability.

Use - ENEA FISHIS Lab is involved in developing new tools in genomics and molecular cytogenetics both in plants and animals: single and mixed chromosome fractions, single nuclei and whole cells can be sorted out at high purity for cytological, genomic and/or molecular manipulations.
Main fields of application are: genome complexity reduction till single chromosome sequencing, development of molecular markers for plant breeding Molecular Assisted Selection (MAS) , genetic stability evaluation for quality assessment in seeds production and plant micropropagation, live starters monitoring in fermentations, microbial contamination evaluation in internal and outoor waters, and more.
ENEA provides a high quality technical service for characterization and manipulations in plants and animals according to the partner needs.

Applications and ongoing Activities - ENEA FISHIS Lab is acting as partner with several academic institutions and private companies for plant genetic stability evaluation, target plant genome sequencing and animal diagnostics (undisclosed recipients).



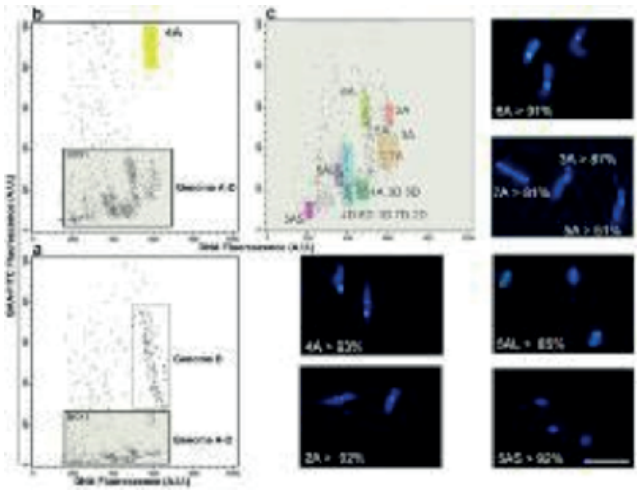


Fig. 1 - Pasta wheat cv Creso chromosomes and nuclei in suspension labeled by FISHIS technique: the presence of specific DNA sequences are r evealed by a different color;
Fig. 2 - Biparametric dot plot analysis of pasta wheat cv Creso chromosomes. Isolation of each single particle (chromosomes) shown on picture is available by flow sorting

Characteristics: CUSTOM
Thanks to a tailored-to-needs service, ENEA FISHIS Lab can provide scientific insights and new materials according to different demands and contexts

Italian National agency for new technologies,
Energy and sustainable economic development
www.enea.it

Department for sustainability
Division Biotechnologies and Agroindustry
Laboratory for Biotechnologies
Contacts: Centro Servizi Avanzati per l'Agroindustria (CSAgri) - csagri@enea.it
Sergio Lucretti – sergio.lucretti@enea.it