of 1448 from ATCC with sample & comp from - HANS KÜNTZEL

Phenotype of VLP-producing abnormal strain (Neurospora crassa?)

Obtained from FGSC (No. 1448) as the extranuclear mutant abn-1 of Neurospora crassa.(inositol-requiring).

Media:
MM (minimal medium): Vogel + 2% sucrose, 2% glycerol.
EM (enriched medium): MM + 0.5% yeast extract, 0.4% potato extract.
SCM (synthetic cross medium): St. Lawrence, sorbose plating medium.
Growth at 30°.

Growth, morphology:
Grows in MM, inositol-independent.
a) Growth on solid medium: Does not penetrate medium. Grows very slowly, but faster on MM than on EM. Pseudocolonial growth (in racing tube invasion type of growth), colonies not dense, spread. In racing tubes slow but constant growth, no stopper growth. No sorbose effect, same morphology with and without sorbose. On MM no aerial hyphae, on enriched medium some short aerial hyphae. No conidiation, no protoperithecia formed (after 3 weeks on SCM). No crosses with fluffy (A or a), no heterokaryons formed with slime (arg^-) or met^-, nic^- (A or a): only abn growth in MM, no segregation in complete medium.
b) Growth in liquid medium: no growth (mass increase) in MM, slow growth (spheres of diameter 1 to 2 cm) in EM. Colour brownish-greenish, extracts of older cells dark green.

ATPase:
Resistant to 15 µg/ml oligomycin.

Cytochromes:
Normal cyt.a and b, low cyt.c.

Cell morphology in thin sections:
In younger cells (2 days growth in liquid medium) most mitochondrial profiles are normal. Some structures having diameters of mitochondrial profiles contain virus-like particles (vesicles of outer diameter 0.1 to 0.2 µ with electron-dense core). Most VLP's are in vacuole-like bodies (mitochondrial ghosts containing outer membrane?), some are in the cytoplasm (lysed VLP-containing bodies?). Other cellular structures are normal.

Mitochondrial DNA and it's gene products:
Mt DNA: lower density (1.695 g/cm^3) than wt (1.702 g/cm^3), contour length increased (histogram shows maximum at 19 mµ like wt Mt DNA, but also many longer molecules up to 25 mµ, not seen in wt.).
Mt ribosomes: higher content of "native" 80s species (containing mRNA and peptidyl-tRNA?) than in wt.
Virus-like particles (containing mt mRNA (7s to 9s) and a proteolipid coded by mt DNA and translated from this RNA) accumulate as granule-like core complexes surrounded by a glycoprotein-containing envelope.
In vitro translation product of mt DNA or VLP-RNA has about half the size of the lipophilic in vitro product of wt Mt DNA (MW 12 000).