

THE DROSOPHILA MELANOGASTER "AGEING" AND "GENE" EXPERIMENTS PERFORMED IN THE INTERNATIONAL SPACE STATION DURING THE SPANISH SOYUZ MISSION IN 2003

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The preliminary results of the analysis of the AGEING and GENE experiments with *Drosophila melanogaster* performed in the ISS during the “Cervantes Mission” (Spanish Soyuz Mission) in October 2003 will be presented. In the Ageing experiment eight so-called miniaquaria containers incorporating one transparent wall loaded with 50 male flies each of four strains of different longevity and geotactic response were launched in a Soyuz capsule and maintained in the 220 Aquarius incubator during nine days (11 days in Microgravity). At specific moments of the flight (day 3, 5 and 7) the motility behaviour of the flies was video-recorded using the IIS Sony Video Camera, Upon recovery of the flies from Space, the males exposed to Microgravity were much weaker than those from the corresponding parallel sister set of flies which had been kept on the Ground under similar temperature and habitat conditions. In the surviving set of flies a series of tests (longevity, mitochondrial gene activity, negative geotactic behaviour and mating capability) were performed during the whole lifespan of the flies. Immediately after recovery, the German groups performed a series of gravitactic and optokinetic tests with both the flight and ground populations. In addition, heads from a group of specimens were dissected and prepared for neuropeptide content analysis of defined neurons. We are now preparing a similar set of experiments to be carried in the Random Position Machine at the DESC, Dutch Experimental Support Center in Amsterdam. In addition, several sets of *Drosophila* pupae were flown attached to filter papers within MAMBA Biocontainers (Dutch Space B.V.), capable of supplying liquids to the biosample by means of a motorized mechanism based on the “Berlingot-Ampoule” concept. Pupae were fixated in the ISS by the combined action of acetone released from the ampoulae, at day 3.5 during the Mission and exposure to cold temperature in the ISS Kryogem freezer. Once recovered, samples were immediately processed for mRNA isolation and microarray analysis. A parallel ground control RPM experiment will be performed in the near future. **Supported by Spanish Government Grants ESP2002-11913-E and ESP2003-09475-C01-02.**

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