

Sample Scientific Abstracts
Science Magazine

Kai Simons & Elina Ikonen, "How Cells Handle Cholesterol"

Cholesterol plays an indispensable role in regulating the properties of cell membranes in mammalian cells. Recent advances suggest that cholesterol exerts many of its actions mainly by maintaining sphingolipid rafts in a functional state. How rafts contribute to cholesterol metabolism and transport in the cell is still an open issue. It has long been known that cellular cholesterol levels are precisely controlled by biosynthesis, efflux from cells, and influx of lipoprotein cholesterol into cells. The regulation of cholesterol homeostasis is now receiving a new focus, and this changed perspective may throw light on diseases caused by cholesterol excess, the prime example being atherosclerosis. (December 1, 2000; 290: 1721-1726)

Yang Yu, et. al., "Coherent Temporal Oscillations of Macroscopic Quantum States in a Josephson Junction"

We report the generation and observation of coherent temporal oscillations between the macroscopic quantum states of a Josephson tunnel junction by applying microwaves with frequencies close to the level separation. Coherent temporal oscillations of excited state populations were observed by monitoring the junction's tunneling probability as a function of time. From the data, the lower limit of phase decoherence time was estimated to be about 5 microseconds. (May 3, 2002; 296: 889-892)

I. Y. Dobrosotskaya, A. C. Seegmiller, M. S. Brown, J. L. Goldstein, R. B. Rawson, "Regulation of SREBP Processing and Membrane Lipid Production by Phospholipids in *Drosophila*"

Animal cells exert exquisite control over the physical and chemical properties of their membranes, but the mechanisms are obscure. We show that phosphatidylethanolamine, the major phospholipid in *Drosophila*, controls the release of sterol regulatory element-binding protein (SREBP) from *Drosophila* cell membranes, exerting feedback control on the synthesis of fatty acids and phospholipids. The finding that SREBP processing is controlled by different lipids in mammals and flies (sterols and phosphatidylethanolamine, respectively) suggests that an essential function of SREBP is to monitor cell membrane composition and to adjust lipid synthesis accordingly. (May 3, 2002; 296: 879-883)

Douglas F. Levinson, et. al., "No Major Schizophrenia Locus Detected on Chromosome 1q in a Large Multicenter Sample"

Reports of substantial evidence for genetic linkage of schizophrenia to chromosome 1q were evaluated by genotyping 16 DNA markers across 107 centimorgans of this chromosome in a multicenter sample of 779 informative schizophrenia pedigrees. No significant evidence was observed for such linkage, nor for heterogeneity in allele sharing among the eight individual samples. Separate analyses of European-origin families, recessive models of inheritance, and families with larger numbers of affected cases also failed to produce significant evidence for linkage. If schizophrenia susceptibility genes are present on chromosome 1q, their population-wide genetic effects are likely to be small. (April 26, 2002; 296: 739-741)