



Cumbria Humanist Group

**Dr Jamie Caryl of the Institute of Molecular and Cellular Biology
at the University of Leeds speaking about "Evolution: in Nature and in a Test Tube."**

**Meeting at the Eden Rural Foyer, Old London Road, Penrith
on Wednesday, 15 July 2009 at 7.30 pm**

Dr Jamie Caryl's talk to the Cumbria Humanist Group about "Evolution: in Nature and in a Test Tube" was particularly pertinent in the bicentenary year of Charles Darwin and the hundred and fiftieth anniversary of the publication of his seminal work "On the Origin of Species". Jamie's topic last year "Superbugs and Micro-evolution" gave the development of bacterial antibiotic resistance as a fundamental example of evolution by natural selection: bacteria with a spontaneous mutation for antibiotic resistance would survive and reproduce in the presence of the drug, while those without the mutation would be killed – the survival of the fittest in the prevailing environment.

While creationists question the 'theory' of evolution and challenge the scarcity of fossil evidence, scientists recognise the massive supportive evidence at the genetic, molecular and micro-organism level and accept evolution as a fact. Most people, including many who hold a religious belief, now recognise the fundamental principles of Darwin's theory as the basis of the development of living species. We must remember that in Darwin's time nothing was known of genetics, although Gregor Mendel, the founding father of genetics, was a contemporary and had they been able to collaborate we can only imagine the effect on the development of modern science.

Microevolution defines the adaptation of organisms via mutation which can be observed both in nature and the laboratory, while macroevolution is the speciation and major divisions between organisms which was the basis of Darwin's theory of evolution by natural selection. One of the best known examples of Darwin's observations involved the beaks of the finches on the Galapagos Islands during the voyage of the Beagle. The birds had evolved different beak shapes which enabled them to exploit different food sources. These differences were the result of mutations in the gene for *calmodulin*, a binding protein involved in the uptake of calcium.

Current research in bionanotechnology applies the techniques of microevolution in the physical sciences ranging from the development of computer chips and other electronics through to chemical compounds such as biological detergents. The question was raised of the ethics of genetic modification of plants for food. In reality this has been carried out by selective plant breeding for tens of thousands of years, since the transition from hunter-gathering to farming. Present reservations would seem to be based on the dubious role of the international chemical and pharmaceutical industry rather than intrinsic problems with the scientific techniques.

The next meeting of the Cumbria Humanist Group will be on 16 September, 7.30 p.m. at Morton Community Centre, Wigton Road, Carlisle, when Paul Pettinger of the British Humanist Association will talk about the BHA's Anti-Faith Schools campaign.

If you are interested in Humanism, visit our website at www.cumbria-humanists.org.uk or telephone 01228 810592 or 01768 881245 for more information.

(460 words)

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Affiliated to the British Humanist Association and the National Secular Society