Top 20 Publications

Alan Smith has published over 140 peer reviewed papers (of which 13 were in Cell, 14 in Nature, 6 in PNAS and 3 in Science), 38 reviews and chapters and holds 13 issued US Patents. Here his top contributions are listed and summarized.

Genetic Code and Initiation of Protein Synthesis


Following the earlier demonstration that mitochondria, like all prokaryotes, utilise fMet-tRNA, these papers demonstrated for the first time that AUG is the initiation codon in eukaryotic organisms, a result that reversed conventional thinking at the time, and has since been confirmed in a wide variety of organisms. This was one of the last major codon assignments of the genetic code.

Viral Protein Synthesis


These papers describe for the first time the translation of an exogenous eukaryotic mRNA in a mammalian cell-free system and subsequent early studies using RNA from tumor viruses.

Identification and Genetics of Tumour Antigens

7. Paucha, E., and Smith, A.E. (1978). The sequences between 0.59 and 0.54 map units on Simian Virus 40 DNA code for the unique region of small-t antigen. Cell, 15: 1011-1

The first three papers formally established the organisation of the early region of the SV40 genome, and provided definitive, functional evidence of one of the first models of mRNA splicing and the first example of one sequence of DNA encoding two distinct proteins. Subsequent studies characterised other proteins, including p53, in virally transformed cells.

Function of Tumour Antigens

Polyoma Virus Middle-T


This paper is the first to describe a protein:protein interaction between an oncogene product and a tyrosine kinase involved in cellular regulation; the first example of an association now known to be based on SH-2 interactions and to be almost universal in signal transduction pathways that regulate normal and oncogenic cell proliferation.
Nuclear Localisation


These papers were the first to describe the now prototypical nuclear localisation signal of SV40 Large-T; related sequences are commonly utilised by nucleated cells and have since been characterised in hundreds of other proteins.

Production of Therapeutic Proteins in the milk of transgenic animals


The first demonstration of the production of a therapeutic protein in the milk of transgenic animals; a result that lead immediately to testimony in the US Congress, later to the formation of a new Company; and in 2006 to EMEA approval of the first protein therapeutic produced in this manner.

Cystic Fibrosis - Molecular and Clinical Studies


This series of papers describe: the first isolation of the complete CFTR cDNA, the first isolation of the CFTR protein, and a monoclonal to the protein, the first demonstration of the molecular basis of the defect that causes CF, the first evidence that CFTR is a chloride channel, the first molecular dissection of the molecule, and a first classification of CF mutations. Plus early clinical studies of gene transfer as a treatment for Cystic Fibrosis using both viral and non-viral vectors.

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