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Summary of scientific accomplishments:

1. As a graduate student assisted A.D. Hershey (Nobel Laureate) in proving that bacterial viruses undergo genetic exchange and that a linear map can be constructed using recombination values. The work was described in two publications. (PNAS 34: 89, 1948 and Genetics 34: 44, 1949)
2. Obtained the first heterozygote by mating in Dictyostelium, and showed that the characters segregate in Mendelian fashion. (J. Gen. Microb.,30: 349, 1962)
3. Obtained the first strain of Dictyostelium to grow without bacteria in axenic medium. (BBRC 29: 53, 1967)
4. In collaboration with A. Rich (MIT), established that slime molds have polyribosomes. (BBA 80: 508, 1964)
5. Showed that during differentiation of slime molds, ribosomal RNA is continually synthesized, in spite of step-down conditions. (BBA, 149: 407, 1967)
6. Established that the ribosomal RNA synthesized during differentiation is transcribed from the same genes that are active during growth. (Symp. Soc. Gen. Microb. 19: 403 1969)
7. Devised procedures for the isolation of nuclei and mitochondria in slime molds. Isolated their respective DNAs and determined their physico-chemical characteristics. (Arch. Biochem. Biophys. 144: 127, 1971)
8. Discovered the thermosensitive bacteriophage repressor λ cl 857, used currently in genetic engineering for inducing prophage and turning on genes attached to lambda promoters. This work, performed in collaboration with F. Jacob (Nobel Laureate) at the Institute Pasteur, provided evidence that repressors are proteins. (Compt. Rend. Acad. Sci. 254: 1517, 1962). In collaboration with J. Monod (Nobel Laureate) isolated the first suppressor mutations in lambda repressor, confirming its nature. (Compt. Rend. Acad. Sci. 254: 4214, 1962)
9. Was the first to propose that single-strand gaps accumulating in damaged chromosomes are the internal inducers of prophages and SOS functions in bacteria. (PNAS 75: 5817 1978)
10. Established that Single-Strand DNA Binding protein (SSB) is necessary for induction of prophage and SOS functions. Showed the molecular mechanism underlying the induction. (PNAS 79: 2832, 1982)
11. Contributed to the analysis of the structure and function of lambda repressor by immunological means. (J. Bacteriol. 171: 1235, 1989)
12. Devised a strategy for physical mapping of genomes without need for cloning. (BioTechniques 16:463-468, 1994)
13. Devised a paternity technique for Loligo pealei using microsatellites.