

Title (en)
METHODS FOR MEASURING PHYSICAL CHARACTERISTICS OF NUCLEIC ACIDS BY MICROSCOPIC IMAGING

Title (de)
VERFAHREN ZUR MESSUNG PHYSIKALISCHER EIGENSCHAFTEN VON NUKLEINSÄUREN DURCH MIKROPISCHE ABBILDUNG

Title (fr)
PROCEDE PERMETTANT DE MESURER DES CARACTERISTIQUES PHYSIQUES D'ACIDES NUCLEIQUES PAR IMAGERIE MICROSCOPIQUE

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Application
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Abstract (en)
[origin: WO9631522A1] Disclosed is a method for measuring physical characteristics, such as size and weight, of individual molecules. The method involves subjecting a deformable or nondeformable molecule to an external force which causes conformational or positional changes and then measuring these changes. Preferred ways to measure such changes include: 1) determining the rate at which a molecule becomes oriented in a new direction when the direction of the perturbing force is changed, 2) determining the rate at which a deformable molecule returns to a relaxed state after termination of the external force, 3) determining the rate at which a molecule rotates, 4) measuring the length of a molecule when it is partially stretched, or 5) measuring the diameter of a spherical or ellipsoidal molecule. These measurements can be performed by use of a light microscope connected to an image processor or spectroscopic device. The invention is particularly useful for measuring polymeric molecules such as nucleic acids and can be used to determine size and map location of restriction digests.

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IPC 8 full level
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C-Set (source: EP)
C12Q 1/6806 + C12Q 2565/601 + C12Q 2527/125

Citation (search report)

- [X] US 4994373 A 19910219 - STAVRIANOPOULOS JANNIS G [US], et al
- [A] WO 8910977 A1 19891116 - ISIS INNOVATION [GB]
- [X] CAI WEIWEN ET AL: "Ordered restriction endonuclease maps of yeast artificial chromosomes created by optical mapping on surfaces.", PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 92, no. 11, 1995, 1995, pages 5164 - 5168, XP002183748, ISSN: 0027-8424
- [X] WANG YU-KER ET AL: "Optical mapping of site-directed cleavages on single by the RecA-assisted restriction endonuclease technique.", PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 92, no. 1, 1995, 1995, pages 165 - 169, XP002183747, ISSN: 0027-8424
- [X] SCHWARTZ DAVID C ET AL: "Ordered restriction maps of Saccharomyces cerevisiae chromosomes constructed by optical mapping.", SCIENCE (WASHINGTON D C), vol. 262, no. 5130, 1993, pages 110 - 114, XP002914340, ISSN: 0036-8075
- [X] DATABASE BIOSIS [online] BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 1981, MATSUMOTO S ET AL: "LIGHT MICROSCOPIC STRUCTURE OF DNA IN SOLUTION STUDIED BY THE 4' 6 DI AMIDINO-2-PHENYL INDOLE STAINING METHOD", XP002183750, Database accession no. PREV198273044048 & JOURNAL OF MOLECULAR BIOLOGY, vol. 152, no. 2, 1981, pages 501 - 516, ISSN: 0022-2836
- [X] DATABASE BIOSIS [online] BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 1994, HOUSEAL TIMOTHY W ET AL: "High resolution mapping of overlapping cosmids by fluorescence in situ hybridization.", XP002183751, Database accession no. PREV199497172442 & CYTOMETRY, vol. 15, no. 3, 1994, pages 193 - 198, ISSN: 0196-4763
- [PX] MENG XUN ET AL: "Optical mapping of lambda bacteriophage clones using restriction endonucleases.", NATURE GENETICS, vol. 9, no. 4, 1995, pages 432 - 438, XP002070223, ISSN: 1061-4036
- See also references of WO 9631522A1

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