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EDITOR OR COMP	DOBYNS, B.M.
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ABSTRACT
A STUDY IS PRESENTED OF THE MORPHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF $SUP 131$I ON THE THYROID OF BOTH MAN AND RATS. OVER 500 PATIENTS WITH HYPERTHYROIDISM WERE STUDIED IN GREAT DETAIL FOR MANY YEARS WHILE EXPERIMENTS ON THE EFFECTS OF $SUP 131$I IN RAT THYROIDS WERE BEING CARRIED OUT TO FIND THE AMOUNT OF RADIATION WHICH WOULD LEAD TO THE FORMATION OF NEOPLASMS. IT BECAME EVIDENT THAT THYROID NEOPLASMS WERE MORE READILY PRODUCED WHEN THE DOSE WAS SO SMALL THAT NO OBVIOUS HISTOLOGIC CHANGES WERE PRODUCED AND THAT THE NEOPLASM APPEARED FREQUENTLY AND WITH A HIGH DEGREE OF PREDICTABILITY. VARIOUS TECHNIQUES OF RADIOAUTOGRAPHY USING $SUP 131$I IN THE HUMANS AND $SUP 131$I AND TRITIATED THYMIDINE IN THE RATS PROVIDED INFORMATION ON THE PHYSIOLOGICAL FUNCTION AND MITOTIC ACTIVITY AS A NEOPLASM DEVELOPED. THE OBJECTIVES OF THE RESEARCH IN CLINICAL SUBJECTS WERE TO: OBTAIN DATA ON THE AMOUNT AND BEHAVIOR OF $SUP 131$I DELIVERED TO THE THYROID; OBTAIN SEQUENTIAL BIOCHEMICAL AND KINETIC DATA ON THE BEHAVIOR OF THERAPEUTIC $SUP 131$I IN HYPERTHYROIDISM; FOLLOW THE CLINICAL RESULTS TO DETERMINE THE CAUSES FOR FAILURE OF THERAPY, FOR OVERTREATMENT, AND FOR THE DEVELOPMENT OF NODULARITY; AND TO STUDY ANY IRRADIATED THYROID TISSUE THAT BECOMES AVAILABLE. THE OBJECTIVES OF THE ANIMAL RESEARCH WERE TO: DEVELOP A MODEL FOR READILY PRODUCING THYROID TUMORS SOLELY WITH $SUP 131$I; USE THE MODEL TO STUDY THE CIRCUMSTANCES THAT LEAD TO NEOPLASMS IN THE IRRADIATED GLAND; STUDY THE DEVELOPMENT OF NEOPLASMS TO SEE HOW DIFFERENT HISTOLOGIC PATTERNS EVOLVE; DETERMINE WHETHER A HYPOTHYROID STATE AND/OR TSH PLAY A PART IN THE INDUCTION OF SUCH NEOPLASMS; SEE WHETHER THE PREDICTABLE DEVELOPMENT OF NEOPLASMS MAY BE INHIBITED; AND TO APPRAISE THE NATURE OF THE FAILURE TO PRODUCE NEOPLASMS AFTER SOMEWHAT LARGER DOSES THAN THE CRITICAL DOSE. (EDB)

DESCRIPTORS
BIOLOGICAL ACCUMULATION: Q1;BIOLOGICAL MODELS: Q4;
CARCINOGENESIS: T4,Q1;DELAYED RADIATION EFFECTS: Q2;
DOSE-RESPONSE RELATIONSHIPS: Q4;IODINE 131: T1;LATENCY PERIOD:
Q3;LOW DOSE IRRADIATION;MAN;NEOPLASMS: T3;RADIOINDUCTION: Q3;

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AN NTATION	$SUP 131$1, X RADIATION
A. ACT	PROGRESS IS REPORTED ON THE FOLLOWING RESEARCH PROJECTS: RADIATION EFFECTS OF THERAPEUTIC DOSES OF $SUP 131$1 IN THE THYROID IN CLINICAL SUBJECTS WITH HYPERTHYROIDISM; DOSIMETRY OF $SUP 131$1 FOR TREATMENT OF GRAVES' DISEASE, DEVELOPMENT OF THYROID NEOPLASMS IN ANIMALS AND MAN; DEVELOPMENT OF THYROID NEOPLASMS IN THE MARSHALLESE; ROLE OF TSH IN NEOPLASM FORMATION FOLLOWING $SUP 131$1 RADIATION, RADIOIMMUNOASSAY FOR TSH; NEOPLASMS OF THE THYROID FOLLOWING X IRRADIATION IN CLINICAL SUBJECTS; AND THE KINETICS OF VARIOUS TREATMENT DOSES OF $SUP 131$1. (HLW)
DESCRIPTORS	*HYPERTHYROIDISM; *NEOPLASMS—RADIOINDUCTION; *RADIOTHERAPY—SIDE EFFECTS; *THYROID—BIOLOGICAL RADIATION EFFECTS; *THYROID—NEOPLASMS; *TSH—RADIOIMMUNOASSAY;DOSIMETRY; IODINE 131;MAN;X RADIATION
ISSUE	7701
UPPOSTED DESC	ANIMALS;BETA DECAY RADIOISOTOPES;BETA-MINUS DECAY RADIOISOTOPES; BIOLOGICAL EFFECTS;BODY;DAYS LIVING RADIOISOTOPES;DISEASES; ELECTROMAGNETIC RADIATION;ENDOCRINE DISEASES;ENDOCRINE GLANDS; GLANDS;HORMONES;INTERMEDIATE MASS NUCLEI;IODINE ISOTOPES; IONIZING RADIATIONS;ISOTOPE APPLICATIONS;ISOTOPES;MAMMALS; MEDICINE,NUCLEAR MEDICINE;NUCLEI;ODD-EVEN NUCLEI;ORGANS;PEPTIDE HORMONES;PITUITARY HORMONES;PRIMATES;RADIATION EFFECTS; RADIATIONS;RADIOASSAY;RADIOISOTOPES;RADIOLOGY;THERAPY;TRACER TECHNIQUES;VERTEBRATES
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