Departmental programs. JUL 15 1959

Human genetics; mammalian genetics: define staff.

Curriculum < medical / graduate

Space at Medical Center

" " Pharmacology.

Equipment and Furniture.

New Equipment designs.

"Practical systems" of DNA replication.

Use reversible phosphorylase as source of triphosphates? (How then regulate primer?)

(1): ATP + monophosphates + kinases
phosphorylase
block DNAses c/ RNA? Any inhibitory esters?

Nucleiu reagents.

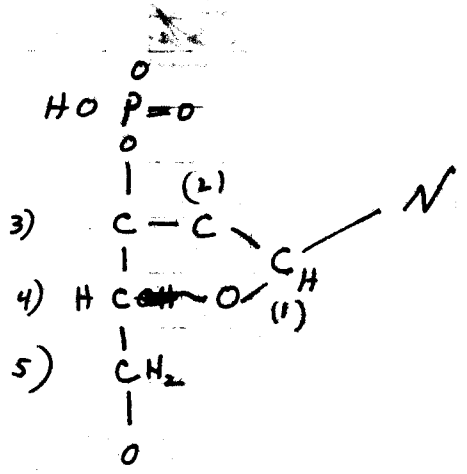
NH_2OH

HNO_2

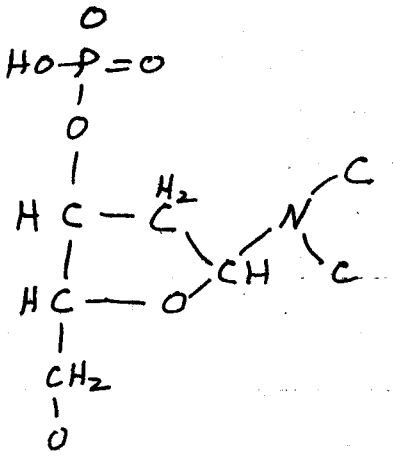
$RNHNH_2$.

Stable diazoniums.

UNA:



RNA:



∴ nothing reactive in deoxyribose residue.

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enzymatic? uracil oxidase → barbituric
thymine → 5 methyl
mediated by methylene blue.
any action on nucleosides or nucleotides?

little information on tide-oxidases and deaminases.
enough for new organisms?

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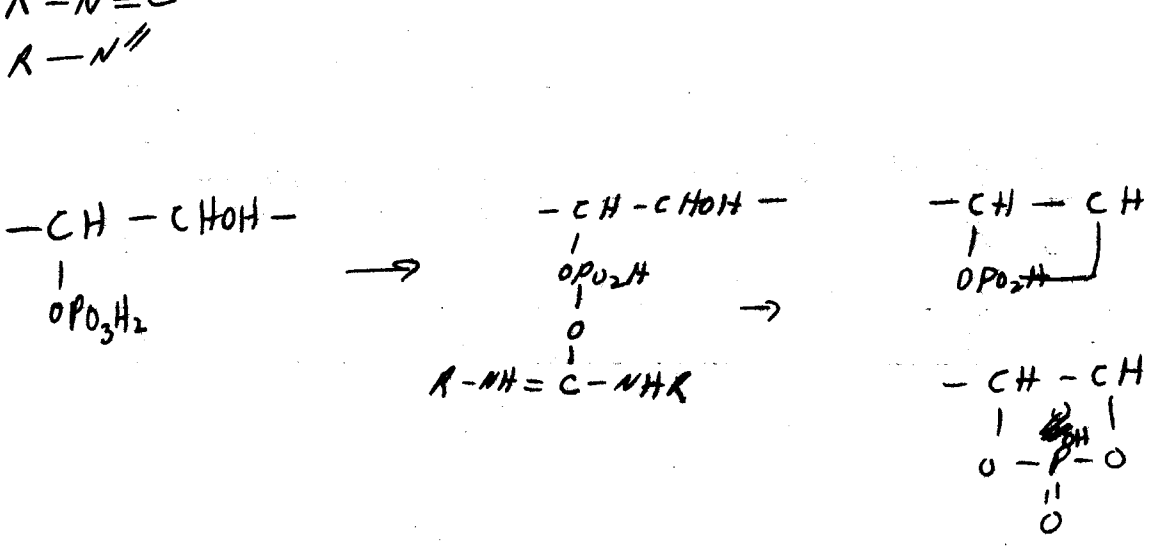
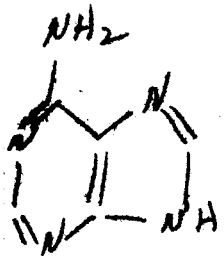
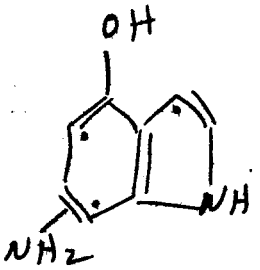
carbodiimide: Khorana Chem Revs. 53.145 (1953)



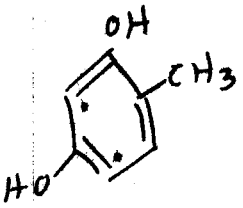
Get stable diazoniums



adenine

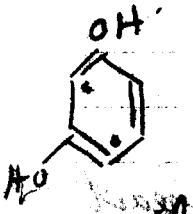


guanine



Thymine

cytosine



uracil

uracil, cytosine and thymine react with iodine

also react with diazobenzenesulfonic acid. Pauly reagent.

(May also react with phenols; tyrosine?; nitrate injection?)

see Nucleic acids, p. 136 — rev. chemistry simple bases

any keto reactions? Oxime?

Cf Woodhouse ~~Adv Biochem 25 347 1950~~
Biochem J 44: 185 1949

Hunter Biochem J. 30: 705 1936

Pucio Adv Biochem 26: 209 1950

Coding:

oligopeptide (antibiotics)

peptidases (subtilisin — of Emil Smith)

3×10^{10} cm/sec.

$1\mu m = 10^{4} \mu$

$\nu = c/\lambda$

$\nu \lambda = c$

$6 \times 10^{14} = \frac{3 \times 10^{10}}{\lambda}$

$\lambda = \frac{3 \times 10^{10}}{6 \times 10^{14}} \quad 30 \times 10^{-4}$

$= \frac{3 \times 10^{14}}{6 \times 10^{14}}$

Esther's work. General plan:

Hfr : P22^s : λ^s

These behave as alleles. P22 also contains a ?clicin.
heterozygotes are doubly resistant.

Theoretical Biology & Fundamental biol processes in medicine. 3/30/59.

Chemical evolution (stellar condensation): Biogenesis. Planetary life.

Molecular clones: DNA ; polyions. → ... heterocatalysis;

Genes: Bioassay $\xrightarrow{dna}$; Chemical change: DNA reactants; Role in protein synthesis.

Aging: Is this a cellular process?

NOSSAL HERZENBERG in vivo interaction.

Somatic Cell Genetics: METHODS. CANCER. DIFFERENTIATION. } are these entirely genetic problems?

ANTIBODY ..... HOMOGRAFT TOLERANCE

DIAGNOSIS OF GENOTYPE.

GAMETIC SELECTION.

Cellular Organization and Function

CODING – OLIGOPEPTIDES

CHROMOSOMES ; CROSSING OVER ; CISTRONS

SEXUALITY MECHANISMS.

VIRUSES

ORGANISM – The Brain

Development: myotypy!

TROPHINS.

What is a virus – as dna

Medicine

Chemosurgery: cell-specific cytotoxins

Mental Disease — chemical basis. Enterofloca qua indoles?

Anti Virotics — & esp. in re cancer.

Aging — connective tissue diseases { atherosclerosis / rheumatism

Antibody response mechanism; homotransplantation.

Gadgetry:

Automicrobiology
Phosphate penetration

Nutrition:
(a) adaptation to salt water.

A. sex

Work outline analysis - miscellany from older notes. 4/2/59.

mating

(1) dynamics of mating
Recognition Wall lysis Injection Pairing Disjunction

(2) Crossing over
recycling; reciprocal?

(3) Rassenkreise in E. coli; → Salmonella; Other intramating groups
Pseudomonas.

(4) Obligate males?

(5) Mutant F's - cf. Hirota now. Instability of foreign F.

(6) Lines after recombination; ~~Contents~~ Progeny from single zygotes (Gan')
Fate of Hfr.

(7) Behavior of heterozygotes < formation / disjunction & reorganization

(8) M/O of UV etc on heterozygotes. Lethal mutation.

(9) Potentiate ♀ness with aeration. Enzyme effects on ♂ and ♀ substances?

(10) Isolation of F and artificial transfer.

(11) Microscope visualization of conjugation.

(12) Dominance of Cst - re Pardee

B. transduction.

1. Use of other markers in Gal Lp system – transduction
2. Crosses involving heterogenotes.
3. Training program – qua Luca.
4. Polygenotes.

Phase variation : epigenesis.

Chemistry of phases: Stocker, Dino
Model peptide antigens: ? Fazekas - talk to Dino ?
(inhibition by amino acids). how many peptides possible ?
Presumably only distinctive sequences are relevant.

D

DNA transfer.

1. Fragile (broken?) cells after sonication
   ← dna ?
2. Protoplasts & osmotic shock
3. High pressure waves

E

Miscellaneous

1. Polarity of bacterial cell. (Extranuclear [plasmid] organelles].
   Behavioral effects.

2. Centrioles in egg activation; continuity of the centriole.

   Non disjunction.

Technical

1. Bacteria on films < agar coated / permeable
2. Separation of genotypes by chromatography ± electro
3. Structural changes by inhibition of crossing over: or (a) cis inversions mechanically impossible, or (b) not interfere with exchange?